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Nongrading and Achievement: A Review

A review of research on nongrading and achievement suggests that the case for nongrading is not yet established and, because of methodological problems in many studies, may not have been adequately tested.

The last ten years have seen an increasing interest among educators in the possibility of moving away from the grade as the basis of elementary education. While several methods of nongrading have been proposed, the most common appears to be the organization of some areas of the curriculum into levels or units (Goodlad & Anderson, 1962). Generally the work to be covered is specified in considerable detail, with two or three levels corresponding to the work which would previously have been covered in one grade. As a child completes one level he moves on to the next so that children in any one grade may be at several different levels. Grade numbers are used but do not necessarily indicate the level at which a child is working. Promotion takes place when the child is ready, at any time of the year and is not limited to the traditional times. In the next "grade" he takes up his work at the point at which he left off at the end of the year.

However, despite the popularity of this particular approach to nongrading, it is possible to feel some doubts about the validity of the research on which are based some of the assumptions about the efficacy of this approach. Some of the research is reviewed below.

Experimental work in this area suffers from two difficulties which may confound the results obtained. The first relates to the comparability of schools when nongraded schools are compared with graded. If the schools are really different, with the graded school treating classes as units and the nongraded school somehow avoiding this, a clearly pertinent question is: Why are the schools different? It is possible that they differ because the teachers differ or because one set of parents demands a par-

ticular approach or because any one of a number of factors is at work. Thus, if the teachers differ, one group of children might be superior in any form of organization.

The second problem is the obverse of the first and relates to the differentiation between two schools. It can be too readily assumed, because a school says it is nongraded, that it is, in fact, nongraded. A different name may disguise the same structure. Similarly, it may be too readily assumed that a graded school is much more rigid than it is in fact. A graded and a nongraded school may well share a similar philosophy and differ only slightly in practice. A discussion of some of the problems found in research in this area can be found in Douglass (1967).

Anderson & Goodlad (1962), on the basis of a survey of school systems, reported on the views of those who have undertaken some measure of nongrading. There is no doubt that those who responded to the survey considered that the change had been beneficial, affecting discipline, achievement, and pupil adjustment. Unfortunately, few objective evaluations appear to have been made by the school systems at that time. Certainly, many systems reported that fewer children required an extra year in Grades 1 to 3 than formerly. However, as the authors point out, this is difficult to interpret since their respondents did not indicate the level of achievement of the children at the end of what would normally be Grade 3.

It does appear from this report that nongrading meets with the approval of parents. This in itself might be an important factor in any measureable change in pupil characteristics.

The experimental results from comparisons of grading and nongrading practices are equivocal and the problems mentioned earlier should be borne in mind.

Skapski (1960) studied second and third grade children in a school in which the reading program was ungraded while that for the other subjects was "carried on under the traditional graded system." A comparison of the level of achievement on the Stanford Achievement Test in paragraph meaning and arithmetic computation revealed that the grade-equivalent scores for arithmetic were considerably lower in both grades than those for reading. This difference was attributed to differences in the type of instruction. However, testing in other schools in which nongrading was not used for reading revealed similar discrepancies between reading and arithmetic grade-equivalent scores. This suggests that Skapski's conclusion is not proven.

A further problem of interpretation in this study relates to a general difficulty in the use of standardized tests where grade norms are available. It is known that such tests are often standardized at one or two points in the year and the norms for other points are derived by extrapolation. The assumption is made that "growth" in a subject takes place in a uniform manner. That this is not so has been shown by Bernard (1964, 1966). It follows that, unless the test is used at the time of year when it was standardized, discrepancies may occur between predicted and actual achievement. While this could not account for all the discrepancy

found by Skapski, it is conceivable that using the arithmetic test at another time might have reduced the differences found.

Another explanation is, of course, that, for some reason, the published norms for the arithmetic test may not have been applicable to the population studied by Skapski.

In a comparison of arithmetic achievement, based on the Arithmetic Battery of the California Achievement Test, of fourth grade children from a graded and a nongraded school, Hart (1962) found a significant difference in favour of the nongraded children. Although Hart considered that "instructional methods and materials utilized for both groups were similar," he also indicates that the staff in the nongraded school developed their own "systematic arithmetic program, independent of any given textbook series." There is no evidence that such a program was in use in the graded school. The conclusion that *nongrading* is effective in raising arithmetic achievement is rather naive.

To some extent the problem of comparability of schools was overcome by Buffie (1962) who used four schools from each of two school systems. The schools were equated on socioeconomic level, enrolment, class size and training and experience of teachers. Children from the school system having nongraded schools were significantly superior in language and work-study skills and in adjustment.

Halliwell (1963) was able to compare children who had experienced a graded system with children in the same school who began school one year later than the former group when the nongraded program was inaugurated. Measures of achievement were made in Grades 1, 2, and 3. Reading was taught on a nongraded basis in Grade 1, spelling only in Grades 2 and 3.

In Grade 1, nongraded pupils had significantly higher achievement scores in word knowledge and reading comprehension. In Grades 2 and 3 significant differences were found for arithmetic (computation and problem solving) which was not taught on a nongraded basis, but not for reading. While the teachers of pupils nongraded in reading seem to have been able to spend more time on arithmetic, the conclusion that arithmetic is improved can only be cautiously accepted at the present time.

Hillson, Jones, Moore, & Van Devender (1964) have reported the only study located which employed random assignment of subjects to a nongraded or graded program. Unfortunately, since only one school was used, numbers are rather small and it is not clear to what extent the original samples were subject to the attrition during the period of the study. Teachers were also randomly allocated after selection on the basis of teaching ability.

In the nongraded group, nine reading levels were set up for Grades 1 to 3. In the graded group, three reading groups were used within each class.

At the end of the third semester the nongraded group was significantly superior on the Lee-Clark Reading Test and also on a word meaning test. This group was also superior, though not significantly, on paragraph meaning.

In view of the design used in this study it seems likely that confidence can be placed in the results obtained.

In contrast to the previous study, Williams (1966) failed to show that the schools involved were strictly comparable. A matching procedure was used to obtain groups comparable in age, sex, and I.Q. Little confidence can be placed in this matching since "boys were not always matched with boys, or girls with girls, but about the same number of boys and girls were selected from each school." Six achievement measures were taken with the nongraded children having significantly higher scores on paragraph meaning. No significant superiority was found on arithmetic concepts or computation, work-study skills or word meaning. The graded group was higher only on spelling. Because of the poor design and bizarre matching procedure, little confidence can be placed in this result.

Jones, Moore & Van Devender (1967) reassessed the groups used by Hillson, *et al.* (1964) after three years in the program. The same measures were used. No significant differences were found on paragraph meaning or word meaning. However, the sizes of the groups had altered from 26 in each group to 27 in the nongraded program and 22 in the graded program.

Morris (1968) was able to compare children who had experienced a graded system with those starting school one year later when a nongraded program was begun. At the end of Grade 3 those in the nongraded program were significantly higher in achievement on the Iowa Test of Basic Skills when intelligence was controlled. This applied for both sexes. This difference was maintained in Grades 4 and 5 where the instruction was similar for both groups.

Brody (1970) compared children from nongraded and graded schools in the same school system. Since the mean intelligence score was higher in the nongraded schools, matched samples were used. In Grade 1 nongraded children were significantly superior in spelling, arithmetic reasoning and arithmetic computation. In Grade 2, significant differences were found in word meaning and the arithmetic measures.

No indication is given in this study of the reasons why some schools were graded and others nongraded within the same system. Without such knowledge it is difficult to assess the results.

The studies reviewed above have generally found at least some difference in achievement in favour of nongraded schools, although the evidence is not always convincing. The studies to be considered below have not found such differences. It should be noted, however, that the defects of design and control observed in the studies reviewed above are to be found also in the studies which do not find differences in favour of nongrading.

The problems which can be encountered in studies of this type are well illustrated in Carbone's (1961) paper. Children in Grades 4, 5, and 6 from a graded and a nongraded system were compared on achievement and "mental health." Matching was done for age and sex. Results obtained show that children from the graded system had significantly higher scores on vocabulary, reading vocabulary, reading comprehension,

language, work-study skills, and arithmetic. On the measures of mental health, only the scores for social participation were significantly different, again in favour of the graded group.

However, confidence in this result is diminished by the results of Carbone's survey of teaching practices. Only 30 per cent of teachers in the nongraded, and 24 per cent of teachers in the graded, system responded to a questionnaire on their teaching practices. These responses revealed that "teachers in the nongraded schools appeared to operate much the same as teachers in the graded schools." This is the problem of differentiation of groups which was mentioned earlier.

In a comparison of within-grade and across-grade grouping for reading, Kierstead (1963) found that gains made in vocabulary and reading comprehension over one school year were not significantly different at any level of intelligence. It is presumed that across-grade grouping approximates the units system of nongrading.

Hopkins, Oldridge, & Williamson (1965) were able to compare achievement of pupils in the two types of approach with the nongraded schools being set up specifically for such a test. Twenty nongraded and 25 graded classrooms were used. Comparisons of the two groups were made at the beginning and end of Grade 3. Using scores on the California Test of Mental Maturity as a covariate it was found that children in the graded classes had significantly higher mean scores on vocabulary and reading comprehension early in Grade 3. By the end of Grade 3 these differences had disappeared. Unfortunately, no results are given for the previous grades, so that a complete assessment of the program is not possible.

Measures of sociometric choice and attendance were also taken. No significant difference was found on either.

It is possible that this study faced the same problem as that found by Carbone, that the schools may, in fact, have failed to differ sufficiently to justify the assumption that two systems were being tested.

Conclusions

The majority of the studies reviewed suffer from the major methodological defect that the control groups have not been shown to be both comparable to, and yet different from, the experimental groups. Because of these difficulties it must be assumed that in most studies no test has, in fact, been made of the effect of the levels or units system. In some cases the use of a system of nongrading has apparently led teachers to modify their methods. In others, as Carbone (1961) has shown, the name may have been changed without a corresponding change in the approach.

At this time we can only conclude that the case for the levels system is not yet proven, and may not have been tested. Until it can be shown that the methodological difficulties have been overcome in studies of nongrading, the results must be sufficiently suspect for educators to avoid basing important decisions on research in this area.

It is apparent that there is a need for more research employing larger numbers of schools with, if possible, random assignment of subjects and

teachers, and with more effort devoted towards ensuring that the methods differ, but differ only in the use of the levels system. In addition, because of the vague nature of the terms used, it is desirable that those who report such studies describe in rather more detail the methods and programs in the schools chosen for study.

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The Basic Writing Vocabulary of Elementary School Children

It was the purpose of this study to determine, on the basis of frequency of usage, those 2,000 words which appear most frequently in children's writing during their first six years of public education in Alberta. Samples of original and unmarked children's written compositions were collected from 35 different Alberta School jurisdictions. Of the 25,000 samples collected, 1,287 were randomly selected for analysis. Results indicate that a small number of high frequency words continues to dominate children's writing. However, the actual words within this core appear to indicate a noticeable change from previous studies done in the U.S.A.

Although numerous vocabulary studies have been carried out in the United States in the past (Thorndike, 1921; Tidyman, 1921; Gates, 1926; E. Horn, 1926; Buckingham and Dolch, 1936; Rinsland, 1945) very few have examined children's own writing. The major research thus far concerning children's own usage was carried out by Henry D. Rinsland in his nationwide study of writing samples collected from students in grades 1-8. No similar major studies appear to have been carried out in Canada, although "A Canadian Word List" (Stothers et al., 1947) was compiled on a different basis. Consequently, Canadian educators and textbook writers have had to rely heavily upon American vocabulary lists which may not necessarily be meeting the particular regional needs in Canada. Furthermore, it is common knowledge that language is by no means static and it is evident that new words are coming into our speech and writing patterns almost daily. Yet, even today, it is necessary to rely on studies which could be badly out of date in terms of children's actual usage and linguistic need.

Problem

This research, which was limited to a sampling of writings collected exclusively from Alberta elementary schools, was designed in part to serve as a pilot study for obtaining and analyzing similar samples from

all provinces in Canada. Furthermore, it was the purpose of this study to determine, on the basis of frequency of usage, those 2,000 words which appear most frequently in children's writing during their first six years of public education. Such findings in part and in whole, were also to be compared with similar results available from the Rinsland study, 1945.

Method

Based on the "List of Operating Schools in Alberta, 1970-71" compiled by the Operational Research Branch, Department of Education, 38 county, division, public and separate school superintendents were contacted for permission to request writing samples from elementary schools within their jurisdictions. These particular systems were chosen to provide a broad and proportionate sample of schools varying in size, geographic location, socio-economic status, as well as to provide a balance between rural and urban districts. Replies granting permission for the study were received from 35 of the 38 superintendents concerned.

Further permission and co-operation was then sought from the principals and teachers of a representative sample of elementary schools within each jurisdiction. Material was also provided for each teacher wishing to participate. In addition to outlining the major purposes of the study, the teachers' material provided specifications for writing samples. In this regard, teachers were encouraged to submit *original* and *unmarked* material written by elementary school children. They were requested to submit only those compositions in which students had complete freedom with respect to the form and the content of the writing. Such writing could include personal letters, stories, poems, projects, reports, articles for school newspapers, etc. Teachers were encouraged to include *all* children in their classes and were asked not to submit more than two samples per individual pupil. Each sample of writing was to be labelled with the following information: age in years, grade and sex. All materials were collected during the latter part of May or early part of June, 1971. These were then mailed directly to the researcher.

A total sample of approximately 25,000 separate compositions, or about 2,500,000 running words, was received. Since it was not economically feasible to analyze the total sample, every 20th composition was randomly selected at each grade level and subjected to a word frequency count. Additionally, those samples which obviously did not meet the necessary specifications were discarded.

The lexical unit employed by Rinsland was used in counting and tabulating words. In this regard, plurals, contractions, abbreviations, etc., were tallied separately. Although illegibles were deleted, correct forms intended when words were spelled incorrectly were counted. Furthermore, proper names of persons and places, except where very well known, were also deleted.

For the final analysis, a total of 1,287 individual writing samples were selected. This total and the grade distribution are shown in Table 1. All compositions thus selected and amended in accordance with the above mentioned specifications were then processed by keypunch operators in preparation for computer analysis. Frequency counts were then made on the

IBM/360 by using the General Index Generator (The University of Calgary Data Centre).

As shown in Table 1, the selected sample of 1,287 compositions produced a total of 117,878 running words. A more noteworthy statistic, however, is the fact that only 7,365 different words were contained within this total. The number of different words used at each grade level shows a continuous progression from grade one through grade six. This is not true, however, for the average number of running words per composition since there appears to be a slight falling off from grade two to grade three.

TABLE 1

NUMBER OF COMPOSITIONS AND FREQUENCY COUNTS FOR EACH GRADE

GRADE	Number of Compositions	Number of Running Words	Number of Different Words	Average Number of Words per Composition	Average Number of Different Words per Composition
1	210	6,384	988	30	4.7
2	208	13,918	1,657	67	8.0
3	218	14,018	1,835	64	8.4
4	212	23,582	2,908	111	13.7
5	217	29,137	3,610	134	16.6
6	222	30,839	3,883	139	17.5
TOTALS	1,287	117,878	7,365	92	5.7

When no reference was made to grade level, the 50 different words most frequently used by Alberta students accounted for almost one-half of all words contained in their sample writings. Corresponding figures are shown in Table 2 for other groups of words in this and the Rinsland study.

TABLE 2

FREQUENCY OF WORD USAGE COMPARED WITH RINSLAND STUDY

Number of Different Words	Percentage of Total Word Count	Percentage for Rinsland Study
50	48	40
100	58	60
200	67	71
500	78	82
1,000	83	89
1,500	87	93
2,000	89	95

It should be noted, however, that the Rinsland results are based on a combined grades 1-8 sample, whereas, the Alberta figures represent only grades 1-6. It should further be noted that although the corresponding percentages between the two studies are often relatively close, further differences were found to exist between the actual words contained in each list. In this regard, the 100 words most frequently used by Alberta students account for 58% of all words used and this compares favorably with the 60% for the corresponding group of words in the Rinsland study. On the other hand, there is only an 80% correspondence between the 100 words currently being used in Alberta and the 100 words used by American students in 1937.

In addition to compiling a non-graded list of the 2,000 most frequently used words, a further analysis was made to determine the 100 most frequently used words at each grade level. In view of the overlap of words from one grade to the next, the grade one list follows in its entirety; the grade two list contains only those words which are not already included in the grade one list; the grade three list contains only those words which are not found in either of the two previous lists, etc. for the remaining grades.

GRADE ONE

The 100 Most Common Words in Order of Frequency

the	little	got	out
and	can	ride	pretty
about	dog	big	ran
I	with	fun	see
a	some	once	go
my	mother	said	going
to	that	so	home
we	for	them	name
was	play	elephants	school
it	house	his	this
he	cat	kitten	too
in	flowers	nice	upon
like	pony	pet	were
on	her	all	did
went	there	look	him
have	elephant	do	put
one	at	mom	took
had	but	came	be
are	time	dad	baby
they	very	love	because
she	when	now	white
you	saw	spring	sister
me	will	got	am
then	up	not	dear
		our	has

GRADE TWO

would	tree	am	I'm
could	back	how	just
down	into	come	their
if	after	bear	two
what	off	told	where

boy	good	father
people	man	Hallowe'en

GRADE THREE

horse	black	what	three
acorns	water	as	trees
scamp	friend	Christmas	
sun	swimming	space	

GRADE FOUR

change	hear	night	first
think	from	long	fish
over	or	around	
by	it's	taste	
smell	caught		

GRADE FIVE

know	last	way
old	us	cave
started	who	

GRADE SIX

your	no	write
car	well	only

The grade one list of 100 words used most frequently accounts for 69% of all words contained within the grade one sample; the grade two list accounts for 65% of all words written at that grade level; grade three—63%; grade four—58% ; grade five—57%; and grade six—56%. The cumulative list of 170 words for all six grades would account for almost two-thirds of the written vocabulary used by children in these grades.

Discussion

This research tends to support the findings of previous similar studies which reveal that children use a comparatively small number of different words in their writing. Thus a small core of high frequency words continues to exist in somewhat similar proportions to those indicated in previous studies. However, this study indicates that the actual words contained within the core have changed even within the very basic list of 100 most frequently used words. The differences become greater as the core gets larger. However, the fact that some written words are used with considerable repetition appears to have some practical implications for educators. The normal sequence of language learning suggests that these written words would first have become a part of the child's experience as well as his listening, speaking and reading vocabularies. Having prior knowledge about the words children will want to use most often in their writing, can thus enable language arts teachers to develop the child's oral and written linguistic competence with respect to such words. Corrective and remedial work could be quite heavily based on a small core of words which are known to be most essential in terms of actual usage. Such information should also

prove invaluable to textbook writers, especially those related to reading and spelling.

It must be remembered that such frequency lists are not meant to provide more than that basic core of words which most children use most often. Nor are the grade designations of prime importance. Beyond the basic core of 2,000 words, vocabularies become highly individualistic both in terms of frequency and the grade level at which they are used. The use of a core vocabulary will always leave considerable scope for the individual to also employ a number of words which are highly peculiar to his own experiences, interests, and abilities.

The main limitation of this study was the size of the sample of writings which was actually analyzed. Although this may have been partially offset by the fact that the writings were randomly selected from a sample which was twenty times that size, further data should be gathered and analyzed in order to validate the present findings. Repeating the study on a region-by-region, cross-Canada basis may therefore be useful for several reasons. A much larger and broader sample could provide comparable data to that used by Rinsland. It would also permit a comparison of word frequency usage from one province to the next or from one geographic area to another. In this regard, it would be interesting to determine whether there is an identifiable writing vocabulary which is distinctive to particular regions or whether there is a common core which is largely Canadian.

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The Validity of Divergent Thinking Tests

Whether divergent thinking tests are valid predictors of 'creativity' is difficult to prove in the absence of any clear definition of what creativity implies among children and adults in general. Moreover many attempts at validation have not adequately controlled for the influence of other factors such as verbal intelligence. In an investigation of a large group of Canadian adolescents in Grade 8, consistent results were obtained with a battery of verbal divergent tests. After holding verbal intelligence constant, there were significant correlations with numerous measures of achievement and interest, but not usually with measures of independence, unconventionality or other personality characteristics. The results differed markedly between the sexes, and the test battery showed superior validity among girls.

Introduction

In spite of widespread experimentation with so-called creativity tests over the past 10 years or more, there is little well replicated evidence regarding what they measure. Some advocates appear to imply that they will pick out the future creative genius, whether artist or scientist. Ausubel (1968), on the other hand, suggests that they have nothing to do with high-level creativity, and chiefly measure glibness, uninhibited self-expression and deficiency of self-criticism. MacKinnon's (1965) studies in fact indicate that Guilford-type tests do not differentiate highly creative architects, scientists and writers from more mundane professional workers in the same fields. Unfortunately there seems to be no accepted operational definition of what we mean by creativity in the general, non-genius, population; hence it has proved impossible to designate any satisfactory criterion of what the tests are trying to predict. It seems preferable then to banish the term 'creativity tests', and to refer to them as divergent thinking (DT) tests since, although some critics have questioned whether they measure anything different from conventional intelligence tests, many studies have confirmed that well-chosen tests do embody a factor which is partly distinguishable from 'g' or V (cf. Cropley, 1966).

Nevertheless there is a good deal of published evidence indicating that DT tests have some useful validity. Moderately good correlations have been

reported with such criteria as production of ideas in the classroom and in written composition, with teacher ratings, with interest in creative artistic or scientific pursuits, and (though less well replicated) with achievement in higher education courses and research work, and in certain occupations that call for independent and original thinking. Tests for younger pupils, e.g. below 11 years, and especially nonverbal-response tests, seem to be less reliable and valid than verbal-response tests at later ages. The present writer (1972a, 1972c) has summarized such evidence elsewhere, and he has drawn attention to the failure of most investigators to separate what is predicted by divergent thinking from what is predicted by the general intelligence or verbal ability component of DT tests. Cronbach (1968) has also stressed this point in his critique of Wallach and Kogan's (1965) research where he concluded that, when convergent ability is held constant, divergent ability adds very little to the prediction of cognitive output, though it does relate to qualities of social adjustment. He showed that stepwise multiple regression is a much more powerful analytic technique than Getzels and Jackson's (1962) or Wallach and Kogan's comparisons of students above and below average in convergent and divergent abilities.

Since relatively little work on divergent thinking has been done with Canadian adolescents (apart from Cropley, 1966) a large-scale investigation was planned into the relations of divergent thinking and field independence with a wide range of cognitive and personality variables. Tests were included which would enable the intelligence factor to be controlled, and sufficient subjects were tested to allow for separate analyses in boys and girls.

Samples and Test Battery

In April 1970, the following battery of nine DT group tests, lasting some 2½ hours, was given to 198 boys and 189 girls in Grade 8 of two junior high schools of Calgary, Alberta. The median age was 13:11 (though the range was from 12:4-17:0), and the score distribution on a standardized nonverbal intelligence test (Safran's Culture-Reduced) closely matched that for the city as a whole. Some 7½ hours additional tests of abilities, interests, social attitudes and personality were also given.

1. Torrance's Circles: making as many different drawings as possible, based on 1-inch circles (14 mins.).
2. Patterns: written interpretations of 8 figures, taken from Wallach and Kogan's Drawings and Lines tests (13 mins.).
3. Alternate uses for 5 objects (18 mins.).
4. Improvements: writing possible improvements to a house (cf. Torrance's Toy Dog test) (10 mins.).
5. Similarities: writing ways in which, e.g. a Cat and a Mouse are alike; 6 pairs (12 mins.).
6. Topics (Thurstone): writing ideas suggested by 'A Parcel' and 'A Man Climbing Up a Ladder' (13 mins.).
7. Consequences: 4 items, e.g. What would happen if everyone suddenly doubled in height? (15 mins.).

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8. Multiple vocabulary (Hudson, 1966): writing as many meanings as possible for 8 easy words, e.g. post (14 mins.).

9. Group Rorschach (Vernon, 1969): written associations to blots VI, III and VIII, shown by colour slides (12 mins.).

Each test, or test item, was scored for the number of unusual responses, defined as responses given by less than 5 per cent of the subjects. The score distributions all showed strong positive skew, and were therefore converted to 10-point normalized scales for correlational purposes. Fourteen Grade 8 classes in all were involved and, as described elsewhere (Vernon, 1971), half the classes took the DT tests under conventional, formal conditions, while the other half did them under more relaxed or permissive conditions, with no timing for the first 7 tests, only an overall limit of two school double-periods. This part of the study showed that, under the relaxed conditions, the production of unusual answers tended to be higher, and the scores generally gave somewhat higher correlations with criteria of creativity and with other measures, including intelligence tests. However the differences were not large, and the factorial structure of the battery was generally similar under the two conditions. Hence the two subgroups were combined in the subsequent analysis; or rather the results for boys and girls were separated instead of those for formal and relaxed groups.

Other Variables

These were chosen with a view to studying a number of hypotheses concerning divergent thinking, and Witkin's (1962) construct of field independence.

1. Age (Youthfulness). 2. Parental socioeconomic status. 3-7. *General and Verbal Abilities*. 3. Otis Verbal. 4. Vocabulary. 5. Shipley Abstraction. 6. SCRIT. 7. Number Series. 8. Concept Maturity—acceptance of rational vs. irrational arguments.

9-15. *Spatial Abilities*. 9. Copying Figures. 10. Kohs Blocks (group version). 11. Paper Formboard. 12. Concealed Figures (Thurstone). 13. Embedded Figures (group version of Witkin's test). 14. Rod-and-Frame, daylight apparatus (individual), scored for total error. 15. Ditto scored for bias towards tilt of the frame.

16-19. *School Grades*. 16. English. 17. Social Studies. 18. Mathematics. 19. Science.

20-31. *Essays*. One essay asking for an autobiography up to age 30, and another on "Calgary as a place to live in", or on "My favorite leisure-time occupation", were marked by two experienced teachers of English on certain defined qualities. Autobiography: 20. Grammar. 21. Fluency. 22. Conceptual Maturity. 23. Imagination and Creativity. 24. Need for Achievement. 25. Sense of Social Responsibility. 26. Interest in a Scientific Career. 27. Interest in an Artistic Career. 28-31. The second essay was scored for the first four qualities only.

32-4. *McClelland's N Achievement Test*, group form. An alternative set of 4 pictures was chosen for girls to write about. 32. N Achievement. 33. Rating for literary style and fluency. 34. Rating for imagination and originality.

35. Total macabre DT responses.

36-9. *Drawing of a Man and a Woman*. 36. Body Sophistication, Witkin's scale. 37. Differentiation of sex characteristics. 38. Rating for drawing skill. 39. Rating for creativity.

40-3. *Choice of Traits Regarded as Desirable in a Friend*. Responses to 26 traits were factorized in the sexes separately, and found to fall into four main clusters. 38. Moral characteristics. 39. Personality qualities. 40. Abilities. 41. Sex-linked traits, e.g. 'tough' for boys, 'good taste in clothes' for girls.

44-8. *Sociometric Choices* of 3 persons of own sex in each of 5 situations. 44. For hiking-camping. 45. For a party. 46. For help in trouble. 47. For a creative project. 48. For a practical project.

49-53. *Ratings by 2 Teachers of Each Class*. 49. Conscientiousness. 50. Curious. 51. Sociable. 52. Independent. 53. General adjustment-maladjustment.

54-60. *Interests*. Strong-type blank, the items being classified under seven headings: 54. Mechanical. 55. Intellectual. 56. Outdoor. 57. Feminine. 58. Social. 59. Artistic, literary or musical. 60. Sporting.

61-7. *Safran Vocational Interest Inventory*. Preferences for seven types of occupation: 61. Economic-commercial. 62. Technical-mechanical. 63. Outdoor-athletic. 64. Service (Police, Hair Stylist, etc.). 65. Humane (Teacher, Nurse, etc.). 66. Artistic. 67. Scientific.

68-71. *School Subject Preferences*. 68. English. 69. Maths-Science. 70. Artistic, musical, dramatic. 71. Other, e.g. handwork, sports.

72-4. *Personal Data Questionnaire*. This included various questions on use of leisure-time, answers to which were summed to yield additional scores on: 72. Artistic-creative. 73. Scientific-creative. 74. Sporting.

75-81. *Sentence Completion Test*. Responses were scored for favourableness vs. unfavourableness to: 75. School. 76. Peers. 77. Family. 78. Own physique. 79. Self. Additional ratings were given for: 80. Defensiveness of responses. 81. Conceptual maturity.

82-92. *Personality and Attitudes Questionnaire*. This was constructed from 85 items aimed at various traits relevant to creativity and independence. The items were factorized and sorted out into clusters, which sometimes differed between the sexes. 82. Positive self-concept. 83. Need for achievement. 84. Self-satisfaction. 85. Independence from peers and adults. 86. Response set: Number of 'Untrues'. 87. Response set: Number of extreme responses, 'Very true' or 'Very untrue'. 88. Number of responses more characteristic of boys than of girls. 89. Conventionality—number of responses frequently endorsed by all subjects. 90. Boys only: Rebelliousness to school and adults. 91. Methodicalness-tidiness. 92. Girls only: Leadership among peers.

93-110 On the basis of Principal Component and cluster analyses, the above variables were grouped into a series of self-consistent though overlapping (oblique) clusters, as far as possible identical between the sexes: 93. 'g.' 94. V. 95. S or combined spatial-perceptual tests. 96. Total achievement. 97. Literary creativity, based mainly on Nos. 22, 23, 30, 31, 34, 39, 45, 50. 98. Conceptual maturity. 99. Total sociometric status. 100. Total teachers' ratings. 101. Science interests. 102. Art interests. 103. Sports interests. 104. Outdoor and physical interests. 105. Feminine vs. mechanical interests. 106. Masculine vs. conventional questionnaire responses. 107. Positive self-concept. 108. Acceptance of adult standards vs. rebellious (boys only). 109. Favourable to school (girls only). 110. Moral vs. independent and extreme responses (girls).

Results

Sex Differences. On all but two tests, Circles and Improvements, girls obtained higher mean scores, though the only significant differences were Consequences ($t = 3.24$), Rorschach (3.18), and Patterns (3.12). The t in favour of boys on the Circles test was 1.80. These results fit in with the general superiority of girls on verbal fluency tasks. Following Hudson's (1966) suggestion that divergent students are more likely to produce macabre or horrific associations, a separate point was given for each such response in all tests. They occurred mainly in Uses (e.g. Using the Brick

to bash in a teacher's or the tester's head). Boys produced significantly more ($t = 3.39$).

Consistency. The mean intercorrelations of the 9 tests in boys and girls were .274 and .329 respectively, giving overall consistencies of .772 and .815. These are the expected correlations of the total battery with another similar battery. Table I shows the first factor centroid loadings, which are fairly uniform for all tests except Circles. This was the only test involving

TABLE 1
FACTOR LOADINGS OF DIVERGENT THINKING TESTS IN BOYS
AND GIRLS

	First Factor Loadings		<i>gV</i> Loadings		DT Loadings, <i>gV</i> held constant	
	Boys	Girls	Boys	Girls	Boys	Girls
Circles	.20	.45	.14	.15	.14	.43
Patterns	.64	.71	.37	.26	.53	.66
Uses	.65	.63	.30	.23	.58	.60
Improvements	.54	.58	.36	.40	.41	.45
Similarities	.64	.61	.18	.12	.69	.64
Topics	.61	.60	.24	.17	.59	.60
Consequences	.61	.60	.41	.43	.46	.47
Multiple Vocabulary	.44	.55	.59	.60	.21	.36
Rorschach Inkblots	.51	.53	.31	.14	.42	.54
Variance Percent	30.7	34.6	11.9	10.1	22.9	28.7

graphic rather than verbal responses, and it tends to be highly specific in boys, rather less so in girls. As described elsewhere (Vernon, 1971), no further interpretable factors were obtained. For example, tests based on nonverbal stimuli (Circles, Patterns and Rorschach) did not differentiate from the verbal-stimulus tests, though there was a slight separation of Consequences and Improvements, i.e. tests in which novel predictions are helped by scientific knowledge.

Independence from Intelligence. The mean r 's with 5 convergent verbal and nonverbal intelligence tests were .213 and .191. It might appear that the correlation between DT tests is little higher than that between DT and CT (especially among boys), as in Getzels and Jackson's study. However when all 14 tests were factorized together, and the first factor rotated to maximize $g + V$, the rotated second factor, representing divergent thinking freed from the influence of intelligence, loaded the DT tests much more highly, as shown in Table I.

Note that gV and DT factor loadings are considerably more irregular from one test to another, though the pattern is quite similar in the two sexes. Multiple Vocabulary is much the nearest to an ordinary verbal intelligence test, Circles and Similarities least so.

Correlations with Other Variables. Another way of studying the same question is to correlate the additional variables, listed above, with the total

TABLE 2
CORRELATIONS OF BATTERY OF NINE DIVERGENT THINKING TESTS
WITH OTHER VARIABLES

No. Variable	First Order		Residual		No. Variable	First Order		Residual	
	Boys	Girls	Boys	Girls		Boys	Girls	Boys	Girls
94. V factor	46	43			51. Sociable	16	32	04	19
1. Youthfulness	27	13	06	08	52. Independent	21	19	08	14
2. Socioeconomic	28	23	09	13	53. Adjustment	-08	24	-08	15
6. SCRIT	35	24	12	02	100. Total ratings	25	40	05	24
7. Number Series	34	21	10	-08	54. Interest Blank				
93. g factor	41	30	13	02	Mechanical	-05	11	-04	06
8. Concept					55. Intellectual	17	07	05	03
Maturity	28	11	13	-01	56. Outdoor	08	06	07	03
9. Copying	23	28	04	07	57. Feminine	05	-15	-01	-12
10. Kohs Blocks	17	22	01	02	58. Social	05	-04	02	-03
11. Formboard	18	21	02	05	59. Artistic	-04	23	-03	19
12. Concealed					60. Sporting	10	09	10	10
Figures	38	28	17	10	61. Safran Interests	07	-21	01	-19
13. EFT	29	27	09	10	Economic				
14. RFT Errors	13	25	01	09	62. Technical	-21	04	-14	08
15. RFT Bias	11	19	-02	14	63. Outdoor	-02	16	-01	11
95. S factor	30	33	07	19	64. Service	-07	-16	-02	-15
16. English	39	47	06	16	65. Humane	10	-06	10	-05
17. Social Studies	37	38	10	13	66. Artistic	-02	11	02	06
18. Mathematics	26	29	05	07	67. Scientific	21	00	09	05
19. Science	38	40	11	17	68. School English	-04	01	-11	-06
96. Achievement	41	46	09	17	69. Maths-Science	14	03	04	01
20. Autobiography					70. Art	-14	13	-06	15
Grammar	37	49	13	03	71. Other	08	-09	05	-04
21. Fluency	41	32	16	14	72. *Leisure Art	16	40	14	28
22. *Maturity	31	27	23	21	73. *Leisure Science	26	14	20	13
23. *Imagination	26	28	11	07	74. Leisure Sport	13	16	10	14
24. N Achievement	19	11	09	02	101. Science				
25. Social					interests	30	10	15	09
Responsibility	19	-03	17	-08	102. Art interests	01	34	02	23
28. Essay Grammar	28	38	09	15	103. Sports interests	07	15	07	14
29. Fluency	27	42	09	24	104. Outdoor-				
30. *Maturity	24	43	11	29	physical	00	13	01	08
31. *Imagination	24	30	14	11	105. Feminine vs.				
32. TAT NAch.	25	26	14	12	Mechanical	11	-19	06	-17
33. Style	35	25	14	06	81. Sentence Com-				
34. *Imagination	42	35	18	15	pletion				
35. Macabre DT	35	27	24	27	Maturity	30	16	17	03
97. Literary					82. Self-Concept	02	-06	01	-04
Creativity	48	62	24	40	83. N Achievement	29	02	18	-03
98. Conceptual					84. Satisfaction	02	14	10	10
Maturity	39	28	19	07	85. Independence	-09	14	-16	13
36. Witkin score	13	32	04	18	86. Untrues	-07	09	-09	04
37. sex	11	30	11	26	87. Extremes	-02	21	01	18
38. skill	08	20	04	10	88. Maculine-				
39. * creativity	08	24	07	21	Feminine	19	-02	04	00
40. Traits, moral	06	08	03	07	89. Conventionality	-13	07	-03	10
41. personal	20	13	08	06	90. Rebellious	-15		-12	
42. ability	-19	07	-08	08	91. Methodical	14		17	
43. sex	-01	-23	-02	-17	92. Leadership		22		16
44. Sociometric hike	02	13	06	16	106. Masculine vs.				
45. party	-03	07	-01	06	Conventional	17	-05	02	-06
46. trouble	18	08	14	05	107. Self-concept				
47. * creative	08	26	02	22	total	16	08	13	05
48. practical	-03	14	-03	09	108. Accepting adults	06		13	
99. Total status	05	17	04	15	109. Accepting				
49. Teacher rating:					school		01		01
Conscientious	26	32	08	16	110. Moral vs.				
50. *Curious	33	41	11	22	Independent		-02		-03

DT battery and with verbal ability, and thus to obtain the residual correlations with DT, holding *V* constant. This is a simplification of Cronbach's procedure, and it was conducted for the two sexes separately. As an example, the correlation of summed DT tests (by Spearman's Correlation of Sums formula) with Youthfulness in boys was .27, the correlation of Youthfulness with summed *V* tests .45, and of DT total with *V* .46. Thus the residual *r* between Youthfulness and DT = $.27 - .45 \times .46 = .06$, which is not significant.

Such residuals become significant at the .05 level when they reach .11 or over in 198 boys, and .12 in 189 girls. These results are shown in Table II, with the significant residuals italicized. Obviously, little stress should be laid on borderline coefficients obtained from about 100 criteria, many of which doubtless overlap. But it is reasonable to take note of correlations with clusters of related criteria, also of residuals which greatly exceed the borderline. Ten of the variables are asterisked: these were the ones which were specifically hypothesized as criteria of creativity in school work and daily life.

It will be seen that there is still some residual correlation of DT with 'g' tests in boys only, and quite a marked residual of .19 with summed spatial tests in girls. A possible relation between DT and Witkin's field independence had been hypothesized, but this must be rejected among boys for whom Concealed Figures is the only test to yield a significant residual. Sex differences are even more marked in the areas of achievement and teachers' ratings. Teachers clearly like the divergent thinking girl, rating her high on various qualities and giving her high marks in most subjects. In boys there are borderline coefficients only with Science marks and ratings for Curious. However there is no confirmation for Getzels and Jackson's finding of a negative relation between 'creativity' and likeability. Similarly the divergent thinking girl tends to receive above average sociometric ratings from peers, especially in a creative situation; but in boys there is only a moderately significant residual of .14 for choice of friends who will be helpful in trouble.

Most of the marks awarded to the essays, and for the TAT stories, give significant correlations in both sexes. But the markers fail to discriminate between imaginative and other qualities. Their marking for Conceptual Maturity tends to give higher residuals with DT than that for Imagination. Clearly, though, DT scores relate quite highly to various aspects of written English, the raw correlations often reaching the .30's or .40's. They relate too to drawing ability in girls but not in boys (cf. the results already mentioned for the *S* factor).

Elsewhere the writer (1972b) has drawn attention to a major polarization of girls' attitudes and interests which contrasts career, academic (especially scientific) and outdoor-sporting interests on the one hand with feminine and social interests and non-career vocations such as secretary, air hostess, on the other hand. DT gives smallish but significant negative residuals in girls with: 57. Feminine. 61. Economic. 64. Service, and 105. Feminine vs. Mechanical interests; positive with: 59. Artistic. 70. Art subjects in school, and with 72-4. Leisure-time Art, Science and Sporting interests. Thus divergent thinking in girls expresses itself mainly

in relation to literary and artistic activities (Nos. 97 and 102). But in boys it correlates strongly with 98. Conceptual Maturity, and 101. Science interests, as well as with 97. Literary creativity, but not at all with 102. Art interests. Note also the significant negative residual with 62. Technical vocation, which tends to be the choice of the less academic boys.

Turning to personality instruments: none of the Sentence Completion scores (75-80) yield DT residuals of even borderline significance, though 81. Conceptual maturity of completions gives a significant coefficient in boys. The results with the personality and attitudes questionnaire were disappointing. There was some tendency for high-divergent boys to show strong Need Achievement (83) and Methodicalness (91), to hold positive self-concepts (107), and to conform to school and adult standards rather than expressing rebellious or independent opinions (85, 90, 108). On the other hand high-divergent girls tend to be strong in Leadership (92), and Independence (85), and to give an excess of extreme responses (87). In neither sex was there a significant negative residual with measures of conventionality, Nos. 88 and 89. It is quite possible, of course, that other questionnaires or personality tests might have been more revealing. Our results provide little confirmation for the picture of the 'high-creative' drawn by Getzels and Jackson or Wallach and Kogan, nor for the divergent-convergent types of Hudson. However there is striking agreement with a research by Parloff et al. (1968) on talented boy scientists. Those students who had produced the most creative research projects were superior to the less creative (but equally achieving) students on a personality factor termed Disciplined Effectiveness, as measured by the California Psychological Inventory. That is, the creatives did not show the nonconformist, rebellious or Bohemian characteristics which had been noted by MacKinnon among his high-creative adults.

Validity Coefficients. Finally a scholastic and daily-life criterion of

TABLE 3
VALIDITY COEFFICIENTS OF DIVERGENT THINKING TESTS

	<i>r</i> with Creativity Criterion		Ditto, <i>V</i> held constant	
	Boys	Girls	Boys	Girls
Circles	.10	.25	.06	.16
Patterns	.24	.47	.09	.36
Uses	.32	.38	.20	.28
Improvements	.32	.45	.19	.28
Similarities	.30	.35	.24	.28
Topics	.27	.37	.19	.29
Consequences	.39	.48	.25	.28
Multiple Vocabulary	.46	.53	.17	.21
Rorschach Inkblots	.32	.34	.18	.28
Total DT Battery	.51	.63	.29	.42

creativity was obtained from the sum of the asterisked variables, including essay ratings, teacher and peer judgments, and leisure-time artistic and scientific activities. The correlations of each DT test with this criterion, and the residuals when verbal ability is held constant, are shown in Table III. The first order correlations are quite substantial for all tests but Circles, and the validities for the total battery of .51 in boys and .63 in girls suggest that such a battery would be of real diagnostic value to secondary school teachers and counsellors. However much of the prediction is attributable to verbal ability. The DT battery still adds significantly, but its residual coefficients drop to .29 in boys and .42 in girls. In terms of variance, verbal ability predicts 22.8 per cent of the criterion and DT adds 8.1 per cent for boys; the corresponding figures for girls are 23.8 per cent and 17.9 per cent.

Conclusions

The following is a summary of the main points established in this investigation. It should be remembered that these are considered as applying only to white students aged about 13 to 15 years.

1. Group divergent thinking tests based on verbal responses to verbal or nonverbal stimuli, and scored for unusualness, yield an internally consistent factor which correlates with, but is relatively distinct from, convergent verbal ability. It is somewhat, but not greatly, affected by the conditions of administration.

2. Girls tend to score more highly on all such tests, and their scores generally show higher consistency and validity.

3. The contributions of divergent thinking tests to psychological diagnosis cannot be adequately determined without taking steps to hold constant their verbal ability (V factor) component. When this is done, the tests show poorer validity than has been claimed by many advocates of 'creativity' testing, but better than that indicated by L. J. Cronbach's critique.

4. There is a small positive correlation with Witkin's field independence in girls, none in boys.

5. Divergent tests correlate significantly in girls with school achievement, with teacher ratings of personality qualities, and to a lesser extent with sociometric popularity. In boys there are borderline correlations with only a few such variables, e.g. science grades. In neither sex does divergence make for unpopularity with teachers or peers.

6. There are significant correlations with qualities of written English, though not necessarily with imagination or originality as marked by teachers of English. With drawings of human figures, correlations are confined to girls.

7. There are marked differences in interest patterns between the sexes. Divergent thinking tends to correlate negatively with conventional feminine interests in girls, positively with artistic interests and leisure pursuits. In boys it is mainly related to scientific interests, also to measures of Conceptual Maturity.

8. Personality patterns are more obscure; but on the whole boy di-

vergers tend to show high need for achievement, positive self-concepts, and acceptance of adult and school standards; whereas girls tend to show more independence and leadership.

9. With a composite criterion of creativity at school and in daily life, the overall validity of the battery of divergent tests was .51 in boys and .63 in girls. But these coefficients drop to .29 and .42 when V factor is held constant.

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The Relationship Between Neuroticism and Attainment

Using a sample of 200 Canadian high school students, this study was primarily concerned with discovering the relationships between neuroticism and associated variables, as operationally defined by the Neuroticism Scale Questionnaire (Cattell and Scheier, 1961), and academic attainment as measured by four achievement subtests (mathematics, science, Social studies, and English) found in the Stanford Achievement Test—High School Battery. The major finding was that neuroticism is unrelated to overall academic attainment for the high school sample. Although no global relationship was found, some interesting relationships were shown to exist between specific neurotic subvariables and specific achievement tests.

I. Introduction

The relationships between academic attainment and scores on the personality inventories devised by Cattell and Eysenck have been investigated for both students and school children. Many such research studies have been carried out, in Great Britain and the United States in particular. Unfortunately, despite the prodigious amount of work which has been done in this area, results have not been of a uniform nature such as to permit the precise elucidation of these relationships. This is increasingly perplexing in view of the gradual evolution of a consensus amongst major research workers in the area of personality test construction with regard to basic personality dimensions and their measurement.

At the university level, Furneaux (1956) found that British students who do well (Oxford in this case) score more highly on neuroticism than other students. In 1962, Furneaux reported that neurotic introverts had the lowest rate of failure in examinations at a university level. Kelvin and his co-workers (1965) confirmed the superiority of the neurotic introverts in this regard, adding that student failures tended to be neurotic extraverts. Lynn and Gordon (1961), working with male university students, report a positive correlation between neuroticism, as measured by the *Maudsley Personality Inventory*, and size of vocabulary. They also

report a curvilinear relationship between neuroticism and scores on Raven's matrices, subjects in the middle range of neuroticism doing best. The fact that Lynn and Gordon use the Yerkes-Dodson law as a theoretical basis for their assertions has been criticized rather severely by Biggs (1962). The idea that curvilinearity might explain contradictory findings in the area of neuroticism and attainment was also posited by Eysenck and White (1964), though on somewhat different grounds.

A number of research programs sponsored by the Institute for Personality and Ability Testing at the University of Illinois, have in general pointed to a relationship between stability (the other end of the neuroticism-stability dimension) and attainment. Ballham (1960) found this to be the case for a sample of 103 secondary modern school children, aged 12-15. Warburton and Hadley (1960), and Holmes (1960) corroborated this finding for samples of college populations. Two major research studies on the prediction of scholastic attainment from intelligence, motivation, and personality measures by Butcher, Ainsworth, and Nesbitt (1963) and Cattell, Sealy, and Sweney (1966), making use of both American and British samples of school children aged 12-15, found significant associations between stability and attainment.

Rushton (1968), using *Cattell's Children's Personality Questionnaire*, found that the second-order factors of anxiety and neuroticism correlated negatively with verbal reasoning and school records based on teacher ratings of ability. A final study which will be mentioned is by Entwistle and Cunningham in 1968. This was a follow-up study of 2,995 Aberdeen children aged about 13 years. Evidence was that the relationship between stability and attainment is positive and linear.

The research reported here is an attempt to establish the relationship between neuroticism and academic attainment for a sample of Canadian high school students. The particular nature of the testing instruments used permits not only an analysis of this relationship, but also of the relationships between several neurotic-associated personality dimensions and attainment. It was hoped that a more specific approach of this kind might furnish information which would bear directly on the origin of the inconsistencies abounding in the literature.

The specific hypotheses examined were: (1) For a Canadian sample of high school students, is neuroticism related, positively or negatively, to school attainment? (2) Is the relationship non-linear? (3) Are there sex, rural-urban, or matriculation—non-matriculation differences in the nature of the relationship which may exist? (4) Is there a specific pattern of neuroticism variables which clearly defines the relationship between academic attainment and overall neurotic level?

II. Method

To test these hypotheses, Cattell and Scheier's (1961) *Neuroticism Scale Questionnaire (NSQ)* and the science part A, mathematics part A, English, and social studies tests in the *Stanford Achievement Test—High School Battery Form W* (Gardner et al., 1965) were administered to a sample of 200 Grade XI, high school students attending either the rurally situated Composite High School located in Ponoka, Alberta; or the urban

M. E. Lazerte Composite High School situated in the city of Edmonton, Alberta. Of the 200 students, 144 were from Ponoka and 56 from Edmonton; 102 were male, 98 female; 119 were enrolled in matriculation programs (aimed at preparing students for university entrance) and 81 were non-matriculation or diploma students.

The test administration was done on a class basis. Social science classes (i.e. either social studies, psychology, sociology or English classes) were chosen because they provided the desirable mixture of matriculation and non-matriculation students. Five classes were tested in Ponoka, two in Edmonton. All the classes tested in both schools were selected at random from the total number of social science classes available.

In this manner scores were obtained from the 200 students on the four Stanford achievement measures as well as on the four personality dimensions measured by the *NSQ*—tender-mindedness (I), depressiveness (F), submissiveness (E), and anxiety (cf. *Neuroticism Scale Questionnaire Handbook*—Cattell and Scheier, 1961). Scores on these variables were summed to determine a total achievement score; a total-neurotic—level score for each individual was also calculated. Thus, the total number of variables measured was ten.

The analysis of data was carried out using computer programs developed at the Division of Educational Research Services, The University of Alberta. Two analyses of variance and a factor analysis were carried out on the data.

III. Results

Table 1 consists of Pearson correlations between the eight independent variables. (Total neurotic level and total achievement are not included since these variables are composites.)

TABLE 1
CORRELATIONS BETWEEN NEUROTICISM AND ATTAINMENT:
GRADE XI, ALBERTA STUDENTS
(n=200)

	English	Mathe- matics	Social Studies	Science	I	F	E	Anxiety
English	*	.435	.496	.420	.255	.039	.099	-.021
Mathematics		*	.498	.556	-.041	.105	-.085	-.123
Social Studies			*	.616	.057	-.014	-.086	-.074
Science				*	-.122	.089	-.210	-.111
I—tender-mindedness					*	-.108	.237	.158
F—depressiveness						*	.124	.019
E—submissiveness							*	.147
Anxiety								*

* Correlations greater than 0.145 significant at .05 level.
** Correlations greater than 0.200 significant at .01 level.

The relatively high correlations amongst the achievement subtests are not surprising. However, the correlation between English achievement and tender-mindedness is unexpected: the significance of the relationship is confirmed by analysis of variance. The negative correlation between science and submissiveness is not supported at the level shown by subsidiary analyses.

Correlations between the *NSQ* variables in Table 1 are generally of the same order as those reported by Cattell and Scheier (1961), although submissiveness, anxiety and tender-mindedness appear to be less independent than was indicated by these authors. Differences in culture and age of samples may account for these differences.

The principal components factor analysis of the Pearson correlations gives a summary picture of the findings (Table 2).

TABLE 2
FACTOR ANALYSIS: PRINCIPAL COMPONENTS
(*n*=200)

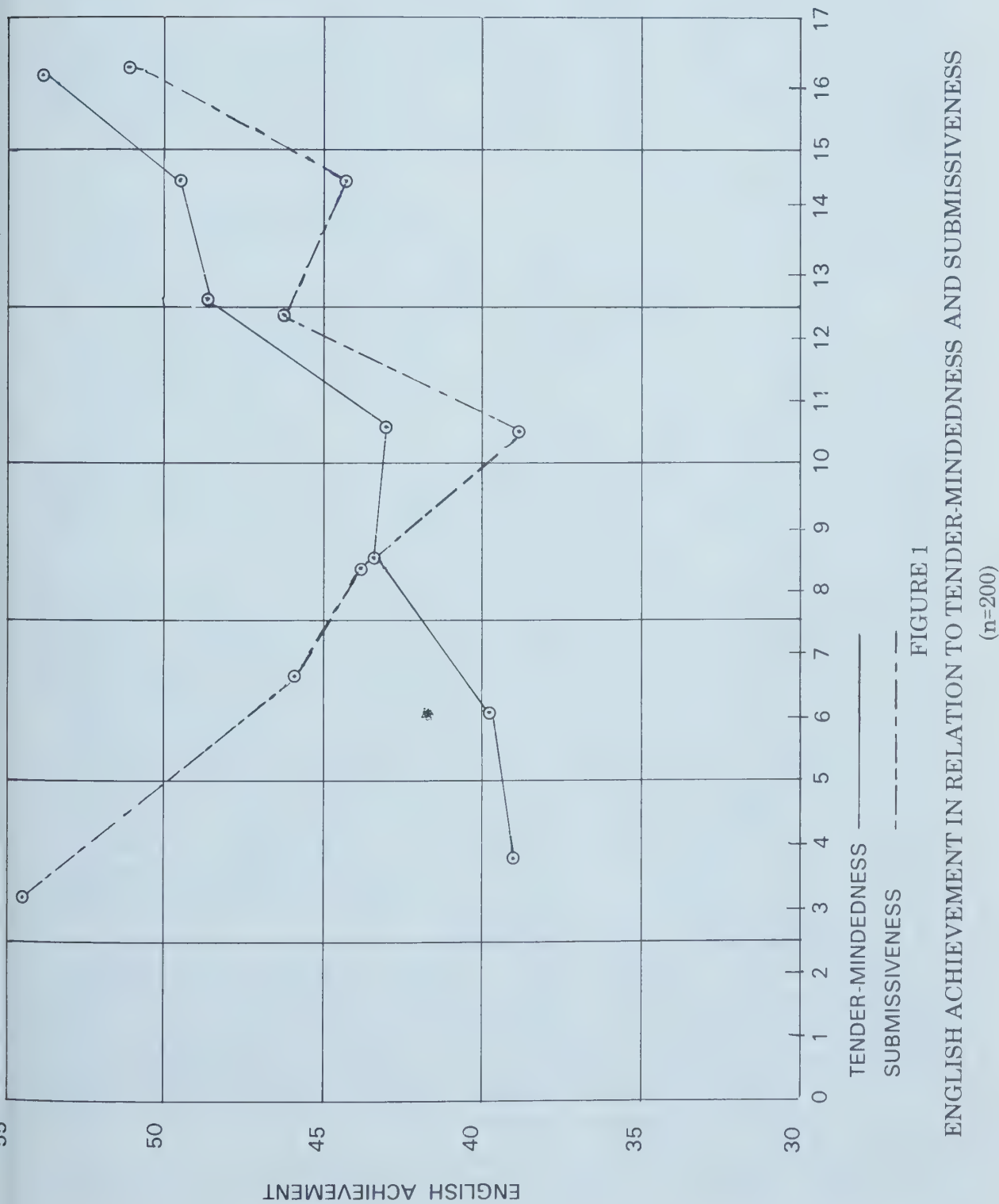
	Factor 1	Factor 2
English	.70	.43
Mathematics	.79	.04
Social Studies	.83	.08
Science	.84	.17
Tender-mindedness	.01	.77
Depressiveness	.06	.06
Submissiveness	-.17	.66
Anxiety	-.19	.47

From this analysis it is clear that none of the *NSQ* variables have high loadings on Factor 1: this seems to be a general achievement factor. This suggests that no significant relationship exists between neuroticism and overall academic attainment.

However, loadings on Factor 2 indicate that although total neurotic level may be divorced from total achievement, English achievement in this sample is certainly related to three of the four *NSQ* subvariables—*anxiety*, *submissiveness*, and *tender-mindedness*. Cattell and Scheier's descriptions of these variables suggest that Factor 2 may be a social passivity factor.

To clarify further the relationships between the Stanford achievement tests and the *NSQ* variables, the total sample of 200 students was classified in seven groups in terms of their scores on *NSQ* variables as well as on total neurotic level. One-way analyses of variance were then carried out on the achievement tests scores. In this way, 25 analyses were carried out. This procedure was also carried out for sub-groups classified by sex, rural-urban, and matriculation—non-matriculation differences. Where significant results were found, further analyses of trends were carried out to discover the nature of the relationships (whether linear, quadratic, cubic, or quartic).

Using the entire sample, only two of the analyses of variance discovered any significant relationships. These were between tender-mindedness and English achievement, and submissiveness and English achievement. On the basis of the trends of the means, analysis reveals that the



relationship between tender-mindedness and English achievement is positive and linear, whereas the relationship between submissiveness and English achievement is non-linear, being quadratic in form (see Figure 1). In other words, both high and low English achievement scores are associated with submissiveness. (The curvilinear nature of the relationship explains the non-significant Pearson correlation between submissiveness and English achievement.)

The analyses by sex, rural-urban and matriculation—non-matriculation differences revealed a quadratic relationship between submissiveness and English achievement when the female and rural subgroups were considered separately. The male subgroup showed a linear relationship between English achievement and tender-mindedness. None of the subgroups classified by sex, rural-urban or matriculation—non-matriculation differences show any major deviation from the general patterns. In particular, there is no connection between total neuroticism score and overall academic attainment.

Plausible explanations can be put forward *ex post facto* for the two significant relationships discovered. The explanation favoured is that the *interests* of the tender-minded individual, in contrast to those of the tough-minded individual, is the determining factor, explaining the linear relationship between tender-mindedness and English. The artistic, reading interests of the tender-minded Canadian students contrast with the more rugged athletic and physical interests of the tough-minded Canadian students. Familiarity with the forms and structures of the English language is a prerequisite for success on the test of English achievement whereas it is doubtful that the transfer value of extracurricular reading is so great in subjects such as science, mathematics, and social studies where factual knowledge is being tested.

The curvilinear relationship between English and submissiveness is somewhat more difficult to explain. The strong need for social approval and a disposition to accept rather than to refute—presumably characteristic of the submissive individual coupled with a rather passive orientation, similar to that of the tender-minded individual, may explain the high scores of the E+ (submissive) students on the English achievement test. The difficulty arises from the fact that the more dominant (E-) students also performed well on the Stanford English test. Reference to Table 1 will verify a tendency for the Stanford achievement scores to be correlated negatively with submissiveness. Dominance is positively related to most achievement scores. This general relationship seems to hold with regard to English achievement as well (at least at the dominant end of the submissiveness-dominance scale).

In view of the possibility that *very high* achievers might be more neurotic than the average run of students, a final series of one-way analyses was carried out comparing the scores (on the five personality variables) of the top 5% (chosen on the basis of overall achievement scores) with the remaining 95% of students. The only significant result was that the high achievers appeared to be less submissive ($p < .03$) than the remaining students.

Two-way analyses of variance were carried out on the variables by

sex, rural-urban, or matriculation—non-matriculation differences. The results were very similar to those commonly found. Females scored higher than males on tender-mindedness, submissiveness, and total neurotic level. Males scored higher than females in science and social studies achievement. Matriculation students scored higher than non-matriculation students on all of the achievement variables. There were no significant differences between rural and urban subgroups, and there were no significant interaction effects.

IV. Discussion and Conclusion

With respect to the four hypotheses which the present study was designed to test these conclusions can be drawn:

1. For this sample of Canadian high school students the personality dimension of neuroticism-stability is not related in any way to overall academic attainment.
2. Since no relationship was found, it is not possible to speak of it as being linear or curvilinear.
3. Neuroticism is not related to academic attainment for any of the subgroups formed on the basis of differences in sex, rural-urban or matriculation—non-matriculation differences.
4. No relationships were found between any of the neurotic (*NSQ*) sub-variables and overall academic attainment as measured by the Stanford tests.

However, whilst there was no relationship between overall academic attainment and any of the *NSQ* variables, interesting relationships were found between specific achievement tests and *NSQ* variables. Submissiveness and English achievement, and tender-mindedness and English achievement, were found to be related. However, these relationships have no bearing on the main problem which the study hoped to achieve: that by working with specific neurotic sub-variables and relating these separately to achievement, it might be possible to explain the ambiguities and contradictions in the literature devoted to this problem.

The failure of studies to produce uniform results in the shape of correlations between neuroticism and achievement may be associated with their relatively simplistic designs. It is becoming increasingly apparent that the relationship between neuroticism-stability and achievement is too complicated to be studied in this manner. Sex differences, ability differences, differences in educational programs and objectives, differences in educational levels, as well as differences in individual habit-structures act as confounding variables which inevitably obscure any direct relationship between personality and attainment which may exist (see Eysenck 1972). Until more extensive and more sophisticated studies are carried out, controlling the relevant variables mentioned above, the outcome of our efforts is likely to continue to be confusion and lack of replicability.

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School Teachers: The Popular Image

This paper describes the content of the stereotypes of school teachers and explores the relationship between the occupation's prestige and its public image. Stereotypes were collected from 590 Ss located in 25 organizations by means of a semantic differential and an open-ended questionnaire. The results serve to dispel the assumption that the teachers' image is a derogatory one. However, contrary to Thielbar and Feldman (1969), the stereotype provides few clues to the public's rationale for its evaluation of the profession.

In urban societies marked by episodic encounters, occupational stereotypes play an important role in everyday behavior. Very often, people are more interested in discovering a stranger's work than his name. This key piece of biographical information provides a fairly accurate assessment of the other's education, income, and life-style. In turn, familiarity with traditional occupational imagery shapes an incumbent's expectations of his reception in the community. Over time, stereotypes may interact with the objective demands of the work situation to condition the occupational role itself (Caplow, 1954). Popular impressions certainly affect both the numbers and types of persons recruited into the occupation.

Despite the practical and theoretical implications of stereotypes, students of work have concentrated on measurement of the differential prestige accorded occupations. The latter problem has been approached in two ways. The subjective technique establishes an occupation's social standing from public evaluations of the relative prestige of job titles. The objective method, on the other hand, ranks occupations from indices based on educational and income levels of their incumbents. Although there is a high correlation between subjective and objective rankings (Reiss, 1961, pp. 124-125; Pineo & Porter, 1967, p. 34), which suggests that laymen also use a job's monetary rewards and educational prerequisites in conferring prestige, a particular occupation may fare less well in the prestige hierarchy than it does in the objective rating. Teaching is one such occupation.

In the first national study of occupational prestige in Canada, Pineo and Porter (1967) asked respondents to place 204 job titles into a 9-position "ladder" of social standing. Transformed mean scores ranged theoretically

from 0 to 100. High school and public grade school teachers received ratings of 66.1 and 59.6 respectively. The score differences from the lawyers' score of 82.3 were 16.2 and 22.7. This discrepancy was considerably greater than that which emerged from Blishen's (1967) objective assessment of the same two occupations: lawyers 75.4, teachers 70.1, for a difference of 5.3 points. Thielbar and Feldman (1969) have suggested that an explanation for such slippage may lie in the public's beliefs about the occupation: "the stereotyping of occupations can be viewed as an intervening link between objective conditions and prestige assessment of occupations (p. 66)."

Information about laymen's impressions of school teachers should be of interest to practitioners of the profession as well as social scientists. Curiously enough, in the relative absence of data, the predictions made by both groups are laced with pessimism. In separate issues of *The A.T.A. Magazine*, Seymour (1963) told teachers that "if we are honest with ourselves, the pictures others have of us, our public image, is none too flattering (p. 22)" and Friesen (1970) said that "the image of the teaching profession needs to be humanized and personalized in a public way (p. 13)." Caplow (1954) who spoke of the "unfavorable popular stereotypes which have attached for centuries to lawyers, physicians, dentists, teachers, and the clergy (p. 135)", explained that "Highly visible, moderately privileged, partially isolated, and responsible in the exercise of their authority for some of the major woes of their fellow men, professional men are logical targets for popular aggression (p. 135)." Hughes (1958, p. 24) and Mills (1956, p. xii) also believed that the public holds a derogatory image of teachers.

What is the specific nature of this unflattering stereotype? Foff (1958), the author of the one empirical study located, posed the question in this way: Are [teachers] esteemed by society as learned and devoted workers in the great tradition of Buddha, Socrates, and Aristotle? Or are they despised as rag-ends and tag-ends of the failure belt of unsalable males and unmarriageable females? Henry Adams eloquently wrote that "A parent gives life, but as parent, gives no more. A murderer takes life, but his deed stops there. A teacher affects eternity; he can never tell where his influence stops." The disgruntled sixth grader simply says, "Teachers stink." Caught between such warring images, the teacher desperately asks not "Who am I?" but "Who do they think I am?" (p. 118).

Foff's (1958) content analysis of 62 American novels found teachers to be depicted as mostly female, unattractive, sexless, and mediocre citizens, who were expected to behave just as their grandparents had. Beyond brief allusions to old maid school teachers and teachers as moral exemplars to the community, the literature offers no further help. No one seems to have measured variation in the stereotype by age, sex, or social class. This study attempts to provide some answers about the content of school teachers' public image and the relationship between the occupation's stereotype and its social standing.

Method

Subjects

Occupational imagery was collected from 590 Ss located in 25 Edmonton, Alberta organizations which were chosen to assure coverage of age,

sex, and social class ranges. The groups included a labor union, a motorcycle club, nursing students, the clerical employees of a bureaucratic organization, a senior citizens' recreation club, a Canadian Legion group, a women's lodge, several men's service clubs, and five community league groups chosen from various socioeconomic areas of the city.

Instruments

A stereotype refers to consensual folk beliefs about the characteristics of a social category. Although this definition omits reference to stereotype inaccuracy (Mackie, 1971), it otherwise conforms to decades of academic usage (Vinacke, 1957).

Two indicators of stereotypy were used, an open-ended questionnaire and a semantic differential. The instruments were randomly distributed in such a way that half the Ss from each organization received each instrument. Although this report is confined to impressions of teachers and lawyers (as a comparison group), Ss were presented with nine ethnic and nonethnic stimulus groups in randomized order. Both instruments required Ss to respond to the following statement: "School teachers (etc.) in general tend to be:".

The open-ended questionnaire asked Ss to write down as many things as they could think of to describe each category which was listed at the top of an otherwise blank page. They were encouraged to make 10 statements. A content analysis was done of the 300 sets of free verbal descriptions so generated by two coders. Inter-rater reliability was measured as the proportion of coding responses upon which the raters agreed out of the total coding responses (agreement plus error). A base of 100 was used to standardize the measure. At the end of the training stage, inter-rater agreement was .83. The reliability calculated midway through the task was .89, and at the end, .79.

For the purpose of this analysis, traits mentioned by 10% or more of the Ss are considered part of the stereotype. While this low cut-off point does not reflect a literal interpretation of the term "consensus", it is a pragmatic result of the difference between spontaneously producing a description and recognizing the appropriateness of one provided.

The semantic differential required Ss to rate the same stimulus groups described by the open-ended respondents on the following set of 14 seven-point bipolar adjectival scales: materialistic-not materialistic, ambitious-unambitious, naive-shrewd in dealing with other groups, contributing-a burden upon the community, disliked-liked by other groups, drunken-sober, sexually moral-immoral, mentally healthy-ill, lazy-hardworking, seldom-often in trouble with the law, not educated-educated, frivolous-thrifty with money, physically clean-dirty, characterized by unstable-stable marriages. (Fifteen additional scales which proved irrelevant for description of occupational groups have been omitted from this report.) The direction of scale polarity was varied according to a randomly designed pattern. For convenience, the scale positions were afterwards labelled from "1" to "7", the first position in each case being the socially desirable pole.

A stereotype is operationally defined as those attributes for which consensuality existed in extreme (non-neutral) scale positions (Gardner,

Wonnacott & Taylor, 1968). More specifically, scales with mean values of between 1.0 and 2.5, and between 5.5 and 7.0 are considered part of the stereotype, provided that the average deviation is less than 1.5.

Results

Total Sample Stereotypes

Table 1 compares the semantic differential image of teachers and lawyers. In the work sphere, incumbents of both occupations were viewed as differentially educated, hardworking, and ambitious. A partial explanation for the greater prestige accorded lawyers may lie in the statistically significant differences in the public's attribution of these traits. However, the relationship between beliefs and social standing becomes less clearcut when teachers and lawyers are compared in terms of the scale "contributing to the community." Hodge, Siegel, and Rossi (1964, p. 294) state that the public uses functional importance of occupations as one criterion in according prestige. Yet, this sample did not distinguish between the functional necessity of teachers and lawyers. Moreover, Wilensky (1964) says that professional status rests on commitment to professional norms which "dictate not only that the practitioner do technically competent, high-quality work, but also that he adheres to a service ideal—devotion to the client's interests more than personal or commercial profit should guide decisions when the two are in conflict (p. 140)." Table 1 shows that teachers were seen as significantly less materialistic and shrewd in their dealings with others than were lawyers. Finally, it is clear that teachers are still

TABLE 1
SEMANTIC DIFFERENTIAL IMAGE OF TEACHERS AND LAWYERS, N = 290

Trait	Teachers $\bar{X}$	Lawyers $\bar{X}$	t
Educated	1.54	1.19	4.90**
Clean	1.68	1.50	2.36*
Seldom trouble w/law	1.87	1.92	-0.40
Mentally healthy	2.14	2.00	1.56
Contributing to community	2.15	2.22	-0.53
Hardworking	2.42	1.97	4.65**
Ambitious	2.48	1.56	8.36**
Sober	2.68	2.98	-2.64**
Stable marriages	2.77	3.44	-1.65
Sexually moral	2.77	3.05	-2.25*
Liked by others	2.97	3.08	-0.76
Thrifty with money	3.11	3.42	-2.29*
Shrewd in dealing w/others	3.35	1.77	8.45**
Materialistic	5.29	6.07	-5.89**

Note: Since all traits shown with means < 2.50 and > 5.50 have average deviations of < 1.50, they are considered part of the stereotypes.

* p < .05, 2 tailed.

** p < .01, 2 tailed.

expected to be paragons of middle-class virtue. The relationship between decorum and prestige remains conjectural.

When Ss were permitted free description, Table 2 shows that the emphasis of occupational imagery shifts to include personality traits as well as task oriented characteristics. Nevertheless, some results do overlap with the semantic differential stereotype. Both teachers and lawyers were again described as educated, hardworking, and valuable to society. Differential assignment of intelligence, monetary rewards, materialism, and dishonesty reinforce the findings reported above. However, teachers' interpersonal relationships rather than their commitment to traditional values are salient. Although teachers were seen as more kindly than lawyers towards their "clients", they were also described as more unsympathetic, domineering, and opinionated. These characteristics, plus the reference to undue pride, suggest that Caplow (1954) is correct in saying that laymen resent the power wielded by all professionals. The greater attribution of these traits to teachers may be in part a function of the non-voluntary association of teachers and pupils. In other words, students cannot exercise the same freedom of choice in approaching a teacher as clients can in asking for

TABLE 2
OPEN-ENDED QUESTIONNAIRE IMAGE OF TEACHERS AND LAWYERS, N = 300

Trait	Teachers %	Lawyers %	χ^2
Sympathetic-supportive towards			
pupils-clients	37.3	17.3	30.22**
Dominates others	26.3	12.3	18.84**
Competent work habits	17.7	17.3	0.01
Proud-egocentric	12.3	16.7	2.26
Educated	12.0	18.0	4.24*
Unsympathetic-destructive towards			
pupils-clients	11.7	8.3	1.84
Intelligent	11.7	24.0	15.58**
Intellectual interests	11.7	7.3	3.28
Hardworking	10.7	9.3	0.30
Well paid	9.3	45.3	97.88**
Contribute to community	9.3	11.7	0.88
Opinionated	8.0	2.7	8.46**
Honest-moral	7.9	10.0	0.73
Materialistic motives	6.0	12.0	6.60*
Articulate	5.7	12.0	7.48**
Physically unattractive	2.3	—	—
Female occupation	2.0	—	—
Dishonest-immoral	1.0	10.7	25.50**
Refusal to stereotype	6.0	6.6	—

Note: All trait frequencies above 10.0% are considered part of the stereotypes.

* $p < .05$, 2 tailed.

** $p < .01$, 2 tailed.

help from lawyers, doctors, etc. Although this logic may be tenuous, Hall (1964, p. 226) does mention this peculiar teacher-client relationship as one barrier to professional status, i.e. prestige. An additional hindrance to occupational prestige noted by Hall (1964) and Caplow (1954), namely devaluation of occupations which have traditionally been preserves of women, lacked importance for this sample. Lastly, it is interesting that despite the depiction of Foff's (1958) novelists, only 2% of this sample remarked on physical appearance.

Stereotypes of Sex Subsamples

Tables 3 and 4 show only the semantic differential and open-ended traits which differed significantly by sex. Since we are told that girls find school more congenial than do boys, female members of the sample could be expected to regard teachers more favorably than males. Moreover, Reiss (1961, p. 184) reported that American women ranked some occupations, including teaching, with a large proportion of employed females higher than do men. The data show that although this expectation was correct, relatively few traits were differentially assigned by sex and the characteristics involve both socio-emotional and task spheres. The degree to which females perceive teachers as sympathetic persons is worth noting.

TABLE 3
SEMANTIC DIFFERENTIAL IMAGE OF TEACHERS, BY SEX

Trait	Males N = 105 $\bar{X}$	Females N = 185 $\bar{X}$	t
Contributing to community	2.40	2.01	2.09*
Hardworking	2.64	2.30	2.17*
Ambitious	2.91	2.24	3.53**
Shrewd in dealing w/others	3.73	3.14	2.76**

* p < .05, 2 tailed.

** p < .01, 2 tailed.

TABLE 4
OPEN-ENDED IMAGE OF TEACHERS, BY SEX

Trait	Males N = 117 %	Females N = 183 %	χ^2
Sympathetic-supportive toward pupils	18.8	49.2	28.20**
Competent work habits	12.0	21.3	4.33*

* p < .05, 2 tailed.

** p < .01, 2 tailed.

Controls for age and SES affected neither this relationship nor the non-significant attribution of unsympathetic-destructive by sex.

Stereotypes of Age Subsamples

Table 5 lists semantic differential traits which differed significantly by age. The middle age categories viewed teachers as less materialistic than the other two categories. In general, the notion that teachers are model citizens increases with age. The open-ended questionnaire findings (Table 6) indicate that personal relationships with teachers particularly concerned the young people who have been most recently exposed to intimate contact with them. (An American study of occupational prestige [Reiss, 1961, p. 187] found teaching to be one of only three occupations that young persons rated substantially lower than did older persons.) Competency and intellectual proclivities carried greater interest for the 50+ group.

TABLE 5
SEMANTIC DIFFERENTIAL IMAGE OF TEACHERS, BY AGE

Trait	(1) 15-24 N = 138 $\bar{X}$	(2) 25-49 N = 119 $\bar{X}$	(3) 50+ N = 33 $\bar{X}$	(1) & (2) t	(1) & (3) t	(2) & (3) t
Materialistic	5.49	5.02	5.48	2.17*	0.00	-1.38
Sober	2.88	2.57	2.24	1.94*	2.49*	1.22
Seldom trouble w/law	2.07	1.70	1.67	2.92**	1.81	0.14
Stable marriages	3.09	2.55	2.24	3.08**	3.11**	1.08
Hardworking	2.50	2.45	2.00	0.30	2.54**	2.12*
Thrifty	3.30	3.10	2.36	1.11	3.56**	2.68**
Clean	1.74	1.71	1.30	0.19	3.32**	2.66**

* $p < .05$, 2 tailed.

** $p < .01$, 2 tailed.

TABLE 6
OPEN-ENDED IMAGE OF TEACHERS, BY AGE

Trait	15-24 N = 131 %	25-49 N = 135 %	50+ N = 33 %	
Sympathetic-supportive	51.1	25.2	30.3	19.99**
Dominates others	38.9	14.1	27.3	21.19**
Competent work habits	15.3	16.3	33.3	6.09*
Unsympathetic-destructive	18.3	5.9	9.1	10.01**
Intellectual interests	12.2	8.1	24.2	6.57*

* $p < .05$, 2 tailed.

** $p < .01$, 2 tailed.

Stereotypes of SES Subsamples

In view of the controversy over the alleged class bias of the education system (see Rosenthal & Jacobson, 1968), it was disappointing when this study failed to establish much image variation by social class. Only three semantic differential traits (Table 7) differed significantly by SES, the finding of a negative relationship between ascription of materialistic motives and SES being the one interesting result. No significant differences emerged from the open-ended questionnaire.

TABLE 7
SEMANTIC DIFFERENTIAL IMAGE OF
TEACHERS, BY SOCIAL CLASS

TRAIT	(1) 60+ N=62	(2) 40-59 N=104	(3) 39- N=65	(1)&(2)	(1)&(3)	(2)&(3)
	$\bar{X}$	$\bar{X}$	$\bar{X}$	t	t	t
Materialistic	4.61	5.11	5.77	-1.76	-3.96**	-2.51**
Ambitious	2.77	2.68	2.20	0.38	2.27*	2.02*
Stable marriages	2.52	2.93	2.82	-1.97*	-1.20	0.49

Note: Blishen's (1967) socioeconomic index was used to classify the occupation of the breadwinner in each S's family. Scores of 60+ are regarded as upper-middle class, scores of 40-59.99 as lower-middle class, and scores of 39.99 and below as working class. Farmers are excluded from this analysis.

* p < .05, 2 tailed.

** p < .01, 2 tailed.

Although these nonresults may be a product of the instruments used, response set should operate to increase stereotypy by SES on the semantic differential and to decrease stereotypy by SES on the projective questionnaire. Further, 74% of a U.S. sample of poor people gave public school teachers an "excellent" or "good" rating, versus 71% of the middle-class Ss, and 70% of the prosperous Ss (Reiss, 1961, p. 205).

Discussion

The purpose of measuring the public's impressions of school teachers was twofold: (1) to replace speculation with empirical data, and (2) to discover whether the content of folk imagery offered some explanation for the discrepancy between Canadian teachers' objective ranking based on income and education (Blishen, 1967) and their lower position in the occupational prestige hierarchy (Pineo & Porter, 1967). Thielbar and Feldman (1969) had submitted that stereotypy serves as an intervening link between objective work conditions and prestige ratings.

On a descriptive level, the empirical data dispel the pessimistic assumption that the public regards teachers as unattractive, ineffectual people. Teachers were viewed as a hard-working, competent group. The older age categories remarked upon their circumspect behavior. Nearly 40% of the open-ended Ss mention the compassion and dedication of teachers towards those in their charge.

Although the slippage between teachers' position on objective and reputational indices indicates that the public takes into account factors other than practitioners' income and training, the stereotype was insensitive to several facets of the teaching situation which social scientists have considered relevant to professional status. Comparison between the images of teachers and lawyers showed that neither the functional importance of the work to society (Hodge et al., 1964) nor the altruistic service orientation of practitioners (Haug & Sussman, 1969; Wilensky, 1964) seem to be important. A preponderance of females is said to lower the status of an occupation (Caplow, 1954, pp. 230-247) but this factor had salience for only 2% of the sample. Both Hall (1964) and Wilensky (1964) have emphasized that status is withheld from salaried professionals locked into bureaucratic structures and subject to the authority of lay boards. Yet, a very few Ss mentioned teachers' lack of autonomy. Though Wilensky's (1964, pp. 148-149) suggestion, that the mystique attached to an occupation's technical expertise becomes diluted when it is grounded in a social science vocabulary familiar to everyone, seems sound, its application to teachers provoked no comment from this sample. Caplow (1954, p. 55) said that degree of control exercised over the behavior of others correlates highly with prestige rankings, and showed that more prestige accrues to occupations whose subordinates are high status adults (e.g. lawyers' clients) than those whose subordinates are low status people (e.g. students). Respondents made no reference to this factor.

A clue may lie in Ss' frequent reference to abrasive aspects of the teacher-student relationship. This relationship is unusual in the sense that the clientele does not seek out the teacher on those rare occasions when special competence is needed to resolve a problem (Hall, 1964). Extended, involuntary exposure to a power relationship may produce resentment in some segments of the population: this affects the esteem accorded teachers. That the belief that teachers adhere to superior standards of moral behavior should diminish their social position is possible, but unlikely.

Obviously, the relationship between an occupation's prestige and its stereotype is complex. One may contend either that the public is not consciously aware of its reasons for awarding or withholding prestige to an occupation (perhaps, because the deference due a job is normative or traditional) or that researchers have not gone about tapping this knowledge in the correct manner. Although neither position is unthinkable, the fact that students of work have neglected occupational imagery suggests that the latter argument be given preference.

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Class Size and the Social Environment of Learning: A Replication

Fourteen dimensions of the social climate of learning of high school classes were examined in their relationships to the size of the classes concerned. Two data samples included in the study were 149 classes participating in the 1967 evaluation of the Harvard Project Physics course and 61 classes in the Montreal Metropolitan area in a variety of subject content areas. Eight of the hypotheses supported by the Harvard data were again supported in the Montreal sample, though only two of the replications reached statistical significance. Cohesiveness and difficulty were negatively correlated with class size; that is, small classes are perceived as more difficult and more cohesive. These two statistically significant replications as well as the six non-significant replications were examined in their relationship to a number of paradigms for study of the effects of increasing class size on the social climate composition of the group. The study suggests a number of implications for replication work in general, as well as some specific findings relating to the climate of high school classes.

Although class size is of considerable interest to school administrators, parents, teachers and students, (particularly as it affects student-teacher ratio and teacher contract negotiations) its presumed effects even on traditional measures of educational quality have been difficult to detect. Class size does, however, affect student perceptions of their learning environment. Walberg (1969) has shown that, for physics classes at least, indicators of the social environment of learning were quite sensitive to variations in class size. Such class properties as cohesiveness, group satisfaction, formality, interpersonal friction among classmates and cliqueness within the class were found to bear both linear and curvilinear relationships with the size of the class. The present study is an attempt to replicate the prior results in a sample of classes in other subject areas. That is, the study attempts to examine the relationships

between class size and student perceptions of their classroom climate and compare these results to those of Walberg (1969). Replication studies are often difficult and are seldom attempted; yet, they must be done if results are to have any generalizability across settings and samples. Since the first study was published in Great Britain, the related research and theoretical rationale are reviewed briefly here.

McKeachie's (1963) review of research on size of *discussion* groups at the college level shows a mixed inconclusive pattern; he speculates that raising class size increases the group resources of knowledge and experience but decreases opportunities for exploiting individual contributions because communication problems arise, and some class members may feel restrained in large groups. Moreover, group dynamics research (Hare, 1962) has shown that leader dominance increases with group size and Stephan & Mishler (1952) found more instructor dominance in larger discussion classes. Thomas & Fink (1963) reviewed 31 studies of group size and performance, participation, interaction, organization, conformity, and satisfaction in a variety of organizations. In general, their review showed that group size was positively correlated with quality of performance and group productivity. With respect to participation, smaller groups appear to inhibit expression of disagreement and dissatisfaction but also tend to give each member more opportunities for interaction and leadership. Larger groups are generally found to be more rigidly organized, leading to less group cohesiveness and more division of labor, along with the rise of cliques and factions. Thomas & Fink also concluded that studies of small groups generally show negative correlations between size on the one hand and satisfaction and resistance to conformity on the other. Porter & Lawler (1966) reviewed a number of studies of group structure, attitudes, and behavior in industry and concluded that small work groups are characterized by higher individual satisfaction, lower absence rates, lower turnover and fewer labor disputes.

The earlier results for physics classes (Walberg, 1969) showed significant linear relationships between class size and four group characteristics: positively with Formality and Diversity and negatively with Cohesiveness and Difficulty. Curvilinear relationships between class size and Cohesiveness, Formality, Goal Direction, Disorganization and Diversity were also uncovered. (see Table 2 for a definition of these terms) Many of these empirical findings were explainable in terms of four paradigms for research on class size and the social climate of learning as illustrated in Figure 1.

The inspiration for the paradigms comes from the Getzels-Thelen (1960) socio-psychological framework and the 'possible intervening mechanisms' are derived from observations of classrooms, the review of relevant literature, and certain formulations of Indik (1965) on organizational structure and climate, and individual attitudes and behaviors. In the present study, no measures of the intervening mechanisms have been obtained; however, it was reasoned that if relationships between the independent and dependent variables could be established, measures of intervening variables might be obtained and analyzed in subsequent work.

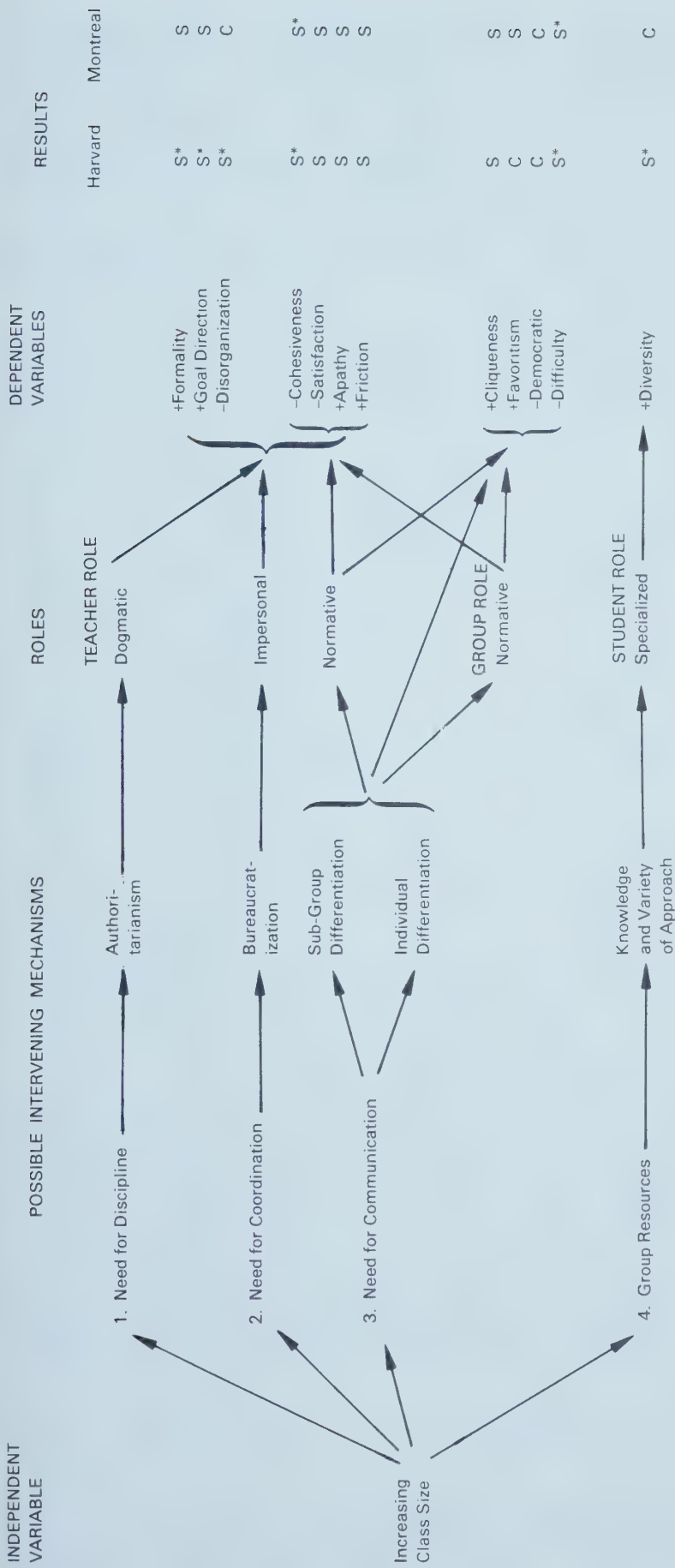


FIGURE 1
Paradigms for Research on Class Size and the Social Climate of Learning

S* signifies that the relationship is supported empirically in the hypothesized positive or negative direction of the hypothesis; the asterisk indicates significance levels less than .05 C indicates results contradicting the hypothesis.

Let us now examine the intervening mechanisms in Figure 1; namely the hypothesized needs for discipline, coordination and communication, and the pool of group resources. Through the eyes of William James (1899), the class is much like a battlefield. The opposing forces are the teacher and the pupils: the teacher strives for discipline and adult standards; the pupils strive for childish interests. When the pupils increase their forces, the teacher must change his tactics. When the class is large, the teacher may become more authoritarian, which leads to a dogmatic teacher role. The hypothesized effects are that the class is perceived by the pupils as more formal and goal directed with more apathy and friction and less disorganization, cohesiveness, and satisfaction.

The second mechanism stems from the analysis of the class as a social system (see Parsons, 1959; Getzels & Thelen, 1960). In the sociological tradition of Max Weber, modern social systems are seen as moving from 'collegial' and 'charismatic' organizational forms to 'bureaucratic' forms because of their increasing size and complexity. In school, there may be greater need for coordination of group efforts in large classes. The teacher may adopt an impersonal role, act uniformly towards individual students, and thus bring about conformity to the standards of the school. This teacher role would have the same effects as those hypothesized for the dogmatic teacher role as described in the preceding paragraph.

The third and fourth mechanisms are in the sociological tradition of Durkheim. As groups become larger, both the need of the individual for communication and the resources of the group increase. One possible consequence is that sub-groups, cliques, or factions arise with varying degrees of conformity to teacher or total group standards. The teacher may then control and reinforce behavior using normative sanctions; the total group may also influence subgroups in this fashion. Similarly, individual students may have less opportunity to communicate in a large class and have a greater need to exchange ideas and feelings with others. These students may initiate hidden, rival modes of communicating and behaving in class—active modes such as note-passing, 'grapevines', spitballs, leadership coups, and juntas or passive modes such as 'anomie', daydreaming, 'turning off'. The hypothesized effects on the social climate of the class would be greater 'cliqueness', favoritism, apathy, and friction, and less democracy, and less perceived difficulty with work due to the use of increased group resources to hide and protect the laggards. Lastly, large classes would have a greater range of student abilities and attitudes. The students may have more specialized roles such as monitor, 'brain', and 'clown' resulting as hypothesized class diversity.

Let us return to the substantive part of the study and examine the empirical relationships between class size and the classroom social climate.

Method

Sample

Walberg's (1969) sample included from throughout the United States 149 classes which participated in the research and evaluation activities of Harvard Project Physics during the academic year 1968-1969. The

replication data were obtained in mid-winter, 1970, from eight English-speaking secondary schools in the Montreal Metropolitan area. Classes were sampled randomly within schools, and represent the following areas of subject matter: six classes of physics, 10 of biology, 10 of chemistry, nine of mathematics, eight of English literature, 11 of history and seven of French. The pupils in Montreal ranged from 15 to 17 years of age and were in their tenth or eleventh year of school, whereas those in the physics group were typically a year older and in their eleventh or twelfth year of school. A comparison of the two samples is presented in Table 1.

TABLE 1
DESCRIPTION OF HARVARD PHYSICS AND MONTREAL SAMPLES

FREQUENCY DISTRIBUTIONS OF CLASS SIZES		
Class Size	Frequency (%)	
	Harvard	Montreal
6-10	3.4	4.9
10-13	8.7	9.8
14-17	14.8	6.6
18-21	17.5	23.0
22-25	20.8	27.8
26-29	22.8	18.1
30-33	6.0	8.2
34-37	4.7	1.6
28-41	1.3	0
Number of Students	3300	1550
Number of Classes	149	61
Mean Class Size	24.3	20.5
Standard Deviation	7.0	6.3

Instrument

Fourteen scales of the Learning Environment Inventory were used to describe the classroom climate as perceived by pupils along 14 dimensions that reflect the relationship of the pupils to one another, to the organizational properties of the class, to class activities and to the physical environment. Each of the Learning Environment Inventory scales contains seven statements descriptive of typical high school classes (see Table 2). The respondent expresses the extent of his agreement or disagreement with each item on a four-point scale. For each of the 14 dimensions, the mean response on the seven items is calculated and the mean of all student ratings in each class provides the estimate of the collective student perception of their classroom climate. Evidence for the validity of the instrument for predicting cognitive and affective learning for individuals and classes is presented in Anderson (1970) and Walberg and Anderson (1972). Measures of response consistency for individual respondents and for class mean ratings are shown in Table 2.

TABLE 2
LEARNING ENVIRONMENT INVENTORY SCALES

Scales	Sample Items	Reliabilities	
		Alpha	Intraclass
Cohesiveness	Members of the class are personal friends.	.69	.85
Diversity	The class divides its efforts among several purposes.	.53	.31
Formality	Students are asked to follow a complicated set of rules.	.76	.92
Speed	The class has difficulty keeping up with its assigned work.	.70	.81
Environment	The books and equipment students need or want are easily available to them in the classroom	.56	.81
Friction	Certain students are considered uncooperative.	.72	.83
Goal Direction	The objectives of the class are specific.	.85	.75
Favouritism	Only the good students are given special projects.	.78	.76
Difficulty	Students are constantly challenged.	.64	.78
Apathy	Members of the class do not care what the class does.	.82	.61
Democratic	Class decisions tend to be made by all the students.	.67	.67
Cliqueness	Certain students work only with their close friends.	.65	.71
Satisfaction	Students are well-satisfied with the work of the class.	.79	.84
Disorganization	The class is disorganized.	.82	.92

Note: Alpha coefficients were obtained from 1048 individual pupils while intraclass correlations for the reliability of class means are based on 64 classes. Reliabilities listed are for the Montreal sample, but do not differ substantially from those calculated using the Harvard data.

Procedure

In order to insure some measure of comparability of the results for the two samples, similar methods of analysis were used for both. Based on the results of the analysis of the data for physics classes, both linear and quadratic relationships were explored. However, as no cubic relationships were identified previously, the cubic terms were omitted in the Montreal analysis. For each learning environment scale, class size and its square were correlated in a step-wise fashion, testing first the correlation of the linear term and second, the combined linear and quadratic terms to determine whether or not the pair were significantly more predictive than the linear term alone (see Anderson, 1970, for the rationale behind the method).

Results and Discussion

The summary of results in Figure 1 suggests that eight of the hypotheses supported by the data for physics classes were again *supported* here, though only two of those replications reached the .05 level of statistical significance. One further hypothesis was contradicted in both instances, while three others exhibited mixed findings. Table 3 shows the same results in quantitative form.

The two replications of the linear terms reveal that Cohesiveness and Difficulty are negatively correlated with class size; that is small classes are perceived as more difficult and more cohesive. Finding for a second time that small classes are more cohesive indicates that conclusions of reviews of organizational research on size and morale perhaps also apply to school classes, in physics and in other subjects. That small classes are

TABLE 3
CLASS SIZE AND THE SOCIAL ENVIRONMENT OF LEARNING:
STEPWISE MULTIPLE REGRESSION ANALYSIS

Learning Environment Inventory Scale	Linear		Quadratic R		Overall F-ratio	
	Harvard	Montreal	Harvard	Montreal	Harvard	Montreal
	Physics		Physics		Physics	
Cohesiveness	-.39***	-.26**	.47***	.39*	20.85***	4.64**
Friction	.11	.23	.16	.35*	1.95	3.60*
Cliqueness	.06	.08	.17	.11	2.14	.35
Satisfaction	.06	-.18	.10	.19	.79	1.01
Speed	-.08	-.07	.08	.07	.53	.15
Difficulty	-.21**	-.33**	.24	.39	4.52**	4.53**
Apathy	.07	.23	.15	.32	1.62	3.00
Favouritism	-.02	.20	.05	.24	.22	1.64
Formality	.24**	.13	.29*	.13	6.55***	.44
Goal Direction	.09	-.24	.29***	.24	6.43**	1.58
Democratic	.09	-.19	.10	.19	.79	1.03
Disorganization	-.12	.20	.24**	.21	4.46**	1.15
Diversity	.17*	-.19	.25*	.27	4.75**	2.05
Environment	.00	.00	.01	.27	.00	1.98

Note: The Quadratic R includes both linear and quadratic class size terms. Statistical tests for each predictor term pertain to the stepwise contribution of each term successively added to the regression model. Relationships designed with one, two, and three asterisks are statistically significant at the .05, .01, and .001 levels, respectively.

seen as more difficult may simply mean that students avoid or drop out of classes which acquire a reputation for difficulty. Or it may mean that teachers are able to get their way in "making it hard," e.g., producing high task orientation, in small groups. We suspect that the small class provides much less opportunity for students psychologically to "drop-out". In a sense, students in the small class are under constant scrutiny by the teacher and are also influenced by the work of their peers which is much more visible in a small class than in a large one.

Table 3 shows that only one of the five quadratic relationships identified

in the physics class data is found in the Montreal data. Indeed, the quadratic for Cohesiveness is reversed. The Harvard sample of physics classes was less and less cohesive in larger classes: the curve is concave upwards. The Montreal sample of classes of different subject matters have highest levels of cohesiveness from class sizes of from 10 to 20; classes larger than 20 are increasingly less cohesive, and the curve is concave downwards. The increasing amount of cohesiveness in large physics classes may be attributable to the use of small groupings of students for laboratory work. Also, the greater amount of cohesiveness in physics classes compared to other classes may result from the compensation in affiliation in the face of a relatively abstract and impersonal subject matter. Actually, the linear model is not a bad approximation to the data in each instance and such a model leads to more consistent findings across samples. It should also be noted that the largest class in the Montreal sample included 35 students, whereas two Harvard classes each contained more than 38 students. Cohesiveness scores for these two outlying physics classes were the lowest of any in the sample and no doubt affect the correlation considerably. It is not known whether or not the presence of similarly large classes in the Montreal sample would have changed these results. In short, whether two differing curvilinear models or a single linear model is most appropriate must await further study.

Returning to the paradigms in Figure 1, the intervening mechanisms may help clarify the findings. The nature of the first and second mechanisms may help explain the relative agreement in the two sets of results pertaining to these mechanisms. If increasing class size leads to teacher authoritarianism and bureaucratization in response to needs for discipline and coordination, then one would expect the observed results across subject areas. On the other hand, the suggested sub-group and individual differentiation resulting under the third mechanism may be more prevalent in physics than in other types of classes. Similarly, the differing results under the fourth mechanism may result from differing teacher and classroom organizational variables in different content areas. Further research should attempt to explore the precise nature and extent of the suggested intervening mechanisms in an effort more adequately to attribute the findings to differences in teacher behaviors in the various areas of course content, inadequacies in the paradigms, or simply measurement error.

One cautionary point. It might well be that other variables are creating a partially spurious correlation between size and group characteristics. A particularly attractive teacher, an interesting subject for study, or perhaps different pupil characteristics in classes of different sizes may be wholly or partially contributing to the observed relationships. It will take further replications under still different conditions, employing more stringent research designs before we can be at all certain.

What are the implications of these results for educational research? As has been pointed out recently by Smith (1970), very few studies in social science fulfill the necessary conditions for valid replication. Certainly, in the present study the samples are not perfectly comparable,

coming from different countries with a somewhat different distribution of class size and coming from entirely different subject matter areas. Yet, we would argue that the two samples are indeed sufficiently close to use for replication work. For, if educational research is to make any serious contribution to educational practice, the kind of findings uncovered must be sufficiently broad and general as to be applicable in a real educational setting. In other words, the findings from one group of studies using one particular sample, if worthwhile, should be relevant for somewhat different situations and somewhat different student groups.

Thus, with respect to the present study, eight supported relationships—two statistically significant—might not seem to be a great number, yet on the other hand to have even two supported in samples as different as those included here leads us to believe that these particular relationships may be sufficiently robust across samples to be applicable in a variety of settings. The replication of these two results, moreover, would seem to provide sufficient evidence to enable researchers to commence an experimental research phase: that is, to manipulate class size and observe in an experimental way the effects on both the cohesiveness of the group and students' perceptions of the difficulty level of the class.

In conclusion, replication studies are generally difficult and seldom attempted by researchers. But, if replication and generality cannot be established or is unpromising, then it will not be possible to apply findings from one setting to any other. We suspect that educational research in general will have to be "replicated" across all kinds of background variables before it can be very relevant. Also, consistency across samples will relate less to the extent to which the experimental conditions are duplicated than to the extent to which findings relate to established theoretical principles.

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The Relationship Between Occupational Choice and Parental Occupation

The present research seeks, first of all, to determine whether a relationship between socio-economic status and occupational choice is found among young children (ages 5-16), and secondly, at which age this relationship asserts itself. In examining occupational choice, this study introduces a consideration of a 'wished' occupational choice and an 'expected' occupational choice. Findings indicate that parental socio-economic status is more highly correlated with child's 'expected' occupation than with his 'wished' occupation. Further, correlations between socio-economic status and occupational choices are found to be much smaller among the girls than among the boys, pointing to the differential impact of socio-economic status upon the sexes.

The problem under investigation is the relationship between family socio-economic status and child's occupational choice. The purpose of this inquiry is to find out if a child's choice of vocation is conditioned by the class culture in which he is reared.

Previous research in this area has largely focussed on older youth, adolescents between the ages of twelve and seventeen. For example, Hollingshead (1949) found that adolescents tend to choose occupations with which they are familiar because their parents and parents' friends are in them. E. Grant Youmans (1956) in his survey of Twelfth Grade Michigan boys discovered a substantial and statistically significant association between social stratification and occupational expectations of the boys. Further, Sewell, Haller and Straus (1957) found that levels of educational and occupational aspirations of youth of both sexes are directly associated with social status of their families when the effects of intelligence are controlled. Again, this study was restricted to older youth. They restricted their sample to adolescents because they claim fantasy aspirations play a great part in the younger child's occupational choice. However, these authors do not explain what they mean by fantasy or to what extent fantasy influences occupational choice among younger children.

Thus, the purpose of this study is to investigate whether socio-economic status is related to occupational choice among young children. In a society where social status is a result of one's occupational achievement, family socialization practices in regard to occupational aspiration are extremely important. Since the child is very early subjected to socialization practices, these may have an effect on the young child's perceptions and hence influence his occupational choice.

The numerous studies of social class differences in child rearing practices generally emphasize that upper and middle class families have socialization practices that reflect hopes for their children's future social and occupational success. Lower class practices do not effectively train for occupational success (Barber, 1957). One study done by Aberle and Naegele (1952) investigated the expectations of middle class fathers for their sons, and found that the fathers wanted their sons to have college training. The striking aspect of this study is that the age range of the children whose fathers were interviewed was from a few months old to thirteen years old. The fathers, making evaluative comments about the behaviour of even very young children is an indication of how early parents' generalized expectations for their children may come into play. Thus, of interest for this study is the age at which a relationship between socio-economic status and child's occupational choice asserts itself.

In considering the relationship between socio-economic status and occupational choice, we need to clarify what we mean by occupational choice. We can distinguish between a fantasy choice and a realistic choice. According to Ginzberg (1951), a fantasy choice refers to a choice that does not take into consideration the barriers which may stand in the way of achieving an occupation. It is a choice of an occupation which permits an activity that seems attractive at the moment. It refers to what a person desires or wishes to be if he could be anything he wanted. A realistic choice is a choice of an occupation that a person considers possible or appropriate for him. It is what a person expects he will probably end up doing. It would appear, therefore, that in considering the relationship between a child's socio-economic status and his 'wished' and 'expected' occupational choices, what a child expects he will probably end up doing will be more closely related to parental socio-economic status than what a child wishes to be if he could be anything he wanted. This is pointed out in Stephenson's (1957) survey of 1000 Ninth Graders. He found that although aspirations (fantasy) are relatively unaffected by class, plans or (real) expectations are more definitely class based. His study showed that while children whose parents were in lower classes aspired to high occupational positions, their plans were more closely related to their father's occupation. Of concern to this study is whether a discrepancy between a 'wished' occupation and an 'expected' occupation asserts itself among young children and whether this discrepancy is related to socio-economic status.

A final consideration is with the effect of age on occupational choice. With increase in age, a child becomes more socialized and the influence of parental socio-economic status on the child's occupational choice should become more pronounced.

On the basis of the above consideration, the following hypotheses were suggested:

1. The higher the child's socio-economic status, the higher will be the status of the occupation chosen as 'expected' occupation.
2. The child's socio-economic status will be more highly correlated with the 'expected' occupational choice than with the 'wished' choice.
3. The higher the child's socio-economic status, the smaller the difference between the 'wished' occupational choice and the 'expected' choice.
4. With increase in age, the relationships in the above hypotheses will become more pronounced.

Method

Subject

The sample came from four schools located in the city of Fredericton, New Brunswick. The schools were selected to provide a range of socio-economic statuses as well as a range of ages. Accordingly, one elementary school (grade 1-7) and one junior high school (grades 8 and 9) were taken from a higher socio-economic district of the city while one elementary and one junior high school were selected from a lower socio-economic area of the city. One class, randomly chosen at each grade level, participated in the study. The age range of the respondents was from 5-16 years with a mean of 10.

Out of the 574 students who took part in the study, there were 298 boys and 276 girls. Fourteen boys and seventeen girls were dropped from the study due to insufficient information, that is, the child did not give a response, his answers were unclear and could not be assigned a score on the Blishen Socio-Economic Index for Occupations (1967), or information on father's present occupation was unavailable in cases where the father was deceased or parents were divorced or separated. A further reduction was made for the females due to the fact that 37 females responded 'housewife' for their occupational choice and this could not be assigned a Blishen score. These 37 cases were analyzed separately.

Measure Used To Test Hypotheses

Occupational choice was determined by asking the child two questions. The first question emphasized a wished or desired occupation, while the second inquired what the child expects he will probably end up doing. The responses to these questions were assigned a score according to the Blishen Socio-Economic Index for Occupations (1967). The child's socio-economic status was determined by each child's response to a question regarding the present occupation of his father. These responses were also assigned a score on the Blishen Socio-Economic Index for Occupations. The children's answers were found to be descriptive and informative. For example, a six year old boy in telling what his father does, said "Brings oil to houses"; a seven year old boy stated "My father works in a store where he sells doors and windows"; and another child indicated, "My father fixes cars". Where possible school records were consulted and found either to correspond or supplement the children's responses.

Procedure

Data were collected within a two week period. Boys and girls in each classroom were questioned as a group. Each answer was written on a separate card and handed in when completed. This procedure was used so that later questions would not result in changing preceding answers. The questions were asked in the following order: (1) "When you grow up, if you could choose any job you wanted, which job would you choose?" ('wished' occupational choice) (2) "What job do you think you will probably end up doing?" ('expected' occupational choice) (3) "What kind of job does your father have and where does he work?" The rationale behind this ordering is that the researcher did not want to direct the child's thinking towards his father's occupation before the other answers were completed. The younger children were given individual attention and assisted with the spelling of their answers.

Findings

The first hypothesis states that the higher the socio-economic status, the higher the occupation chosen as expected. For the boys, this hypothesis is confirmed. Table 1 indicates that the correlation between parental socio-economic status and boy's 'expected' choice is .74 ($p < .05$). As predicted, in the second hypothesis, the boy's socio-economic status is not as highly correlated with 'wished' occupation, $r = .32$ ($p < .05$). With regard to the third hypothesis, a high negative correlation would indicate that the higher the child's socio-economic status, the smaller the difference between the 'wished' and 'expected' occupational choices. Results for the boys show a correlation of $-.45$ ($p < .05$).

TABLE 1
CORRELATIONS BETWEEN SOCIO-ECONOMIC
STATUS AND CHILD'S OCCUPATIONAL CHOICES

	No.	Correlations Between SES and 'wished' choice	Correlations Between SES and 'expected' choice	Correlations between SES and the discrepancy between 'wished' and 'expected' choices
Boys	284	.32*	.74*	-.45*
Girls	222	.09	.25*	-.17*

* $p < .05$

The same procedure is employed to analyze the data from the girls. For the girls, though socio-economic status is significantly correlated with 'expected' occupational choice, $r = .25$ ($p < .05$), this correlation is much smaller than among the boys. As predicted, socio-economic status is found to be more highly correlated with 'expected' choice than with 'wished' choice. The correlation between socio-economic status and 'wished' choice is .09, dropping below the .05 level of significance. Among the girls, an inverse relationship is also found between socio-economic status and

the discrepancy between the 'wished' and 'expected' occupational choices, $r = -.17$ ($p < .05$). Once again this relationship is not as pronounced as among the boys.

The 37 girls who responded 'housewife' for their occupational choice were analyzed separately. It is interesting to note that all but three responded 'housewife' to the 'expected' occupational choice, rather than to the 'wished' choice. These 37 responses were not characteristic of any particular age group or socio-economic status, but are found to be randomly distributed among the population.

To test the fourth hypothesis, that is, the effect of age, the sample population was divided into three parts as equal as possible; a young group consisting of ages 5-8; a middle group, ages 9-12; and an older group, ages 13-16.

TABLE 2
DIFFERENCES IN MAGNITUDE OF CORRELATIONS BETWEEN
SOCIO-ECONOMIC STATUS AND CHILD'S OCCUPATIONAL
CHOICES ACCORDING TO AGE GROUPINGS

Ages	No.	Correlations Between SES and 'wished' choice	Correlations Between SES and 'expected' choice	Correlations Between SES and the discrepancy between 'wished' and 'expected' choices
Boys				
5-8	82	.30*	.51*	-.13
9-12	91	.30*	.87*	-.64*
13-16	111	.36*	.80*	-.44*
Girls				
5-8	54	-.27*	.004	-.29*
9-12	82	.21*	.27*	-.06
13-16	86	.22*	.41*	-.18*

Table 2 suggests that in general, with increase in age, the correlations between socio-economic status and occupational choices become more pronounced. This is particularly noticeable with regard to socio-economic status and 'expected' occupational choice among the boys, where a correlation of .51 ($p < .05$) is found in the youngest age group and increases to .87 ($p < .05$) in the middle group. Though the correlation decreases slightly in the next highest group, i.e., $r = .80$ ($p < .05$), this decrease is minute. In all cases socio-economic status is more highly correlated with 'expected' than with 'wished' occupation. The correlation between socio-economic status and the difference between 'wished' and 'expected' choices is not significant for the youngest group (ages 5-8) but is significant for the other two groups.

Among the girls, the correlation between socio-economic status and 'expected' occupational choice for the youngest group falls below the .05

level of significance. The correlation progressively increases to .27 ($p < .05$) in the middle group and .41 ($p < .05$) in the oldest group. Once again, the 'expected' occupational choice is more highly correlated with socio-economic status than is the 'wished' occupation, all correlations being smaller than among the boys.

In order to discover at which age the relationship between socio-economic status and occupational choice asserts itself, correlations between these variables were computed for each age level.

TABLE 3
DIFFERENCES IN MAGNITUDE OF CORRELATIONS
BETWEEN SOCIO-ECONOMIC STATUS AND CHILD'S
OCCUPATIONAL CHOICES AT EACH AGE LEVEL

Ages	No.	Correlations Between SES and 'wished' choice	Correlation Between SES and 'expected' choice	Correlations Between SES and the discrepancy between 'wished' and 'expected' choices
Boys				
6	20	.32	.55	.05
7	30	.28	.55	-.36
8	27	.26	.33	.02
9	25	.27	.86	-.67
10	28	.28	.85	-.56
11	20	.36	.92	-.71
12	18	.33	.81	-.49
13	44	.35	.70	-.39
14	45	.43	.84	-.56
15	16	-.27	.89	-.73
Girls				
6	13	-.19	-.44	-.04
7	18	-.34	-.27	-.30
8	22	-.20	.25	-.44
9	28	.22	.33	-.13
10	17	.18	.18	.03
11	22	.42	.39	.07
12	15	.14	.31	-.31
13	31	.43	.31	.21
14	44	.03	.40	-.36
15	9	.23	.59	-.27

Table 3 points out, that for the boys, at age 6, the correlation between socio-economic status and 'expected' occupational choice is .55. At age 9, the correlation jumps to .86 and remains high varying only slightly up to age 15 where the correlation is .89.

For the girls, a negative correlation between socio-economic status and 'expected' occupational choice is found at age 6 and 7. At age 8, a

positive correlation asserts itself, i.e. $r = .25$ and progressively increases with minor deviations to a correlation of .59 at age 15.

Discussion

More than half the variance in boy's 'expected' occupational choice can be explained in terms of socio-economic status. This is compatible with the various studies that point to the impact of socio-economic status on the socialization process, which in turn influences the child's occupational choice. This study, in general, supports the prediction that young children are aware of the differences between 'wished' and 'expected' occupation.

Among the girls, only six percent of the variance in 'expected' occupational choice can be explained in terms of socio-economic status. One possible explanation for the weaker correlations among the girls, is that close to half of the girls from the various socio-economic backgrounds chose either to be a teacher, a nurse, or a secretary. In this sample, it appears that the girls' conceptions of possible job careers are limited.

There is a differential impact of socio-economic status on boys' and girls' occupational choices. That is, not only is the correlation between socio-economic status and occupational choice weaker for the girls, but the relationship asserts itself at a later age. This brings into question the nature of this impact. Does socio-economic status refer to the influence of a specific subcultural milieu or are children identifying with their fathers who have come to represent a role model for them? With the boys, the latter may be the case. The girls, on the other hand, do not identify as closely with their fathers and this may be a factor in accounting for the discrepancy between the male and female correlations. This study only inquired into father's occupation, but it would be of interest to find out if mother's occupation, if any, is related to the girl's occupational choice.

The response of 'housewife' among the girls (fourteen percent of the total population), as mentioned previously, is not characteristic of any particular age or status group but is randomly distributed among the sample population. Data from this single study are unable to explain this phenomenon. Further research needs to be done concentrating on those females who expect to work and those who do not. Making such a distinction might reveal more about the chosen category 'housewife'.

In conclusion, we may note that because of the high correlation between age and grade, i.e., $r = .97$ ($p < .05$), it is difficult to separate the effects of these variables empirically. Age may be taken as reflecting the influence of growing up in general, while grade, on the other hand, may refer more to the impact of school on the socialization of the child. This study, however, is unable to point to this distinction because age and grade were found to be so highly correlated.

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Creativity and School: A Social Problem

The main purpose of this paper is to synthesize the various aspects of the relationship between students' creativity and the basic elements of the school system. The second purpose is to show some of the implications of such relationship for the functioning of society. These two purposes can be integrated within a single frame showing that the relation between creativity and school presents a social problem.

The problem implied in the functional relationship of creativity and the school system can be stated as a syllogism:

Premise 1. Certain basic characteristics of the school system do not favour the development of creative students and even discourage it.

Premise 2. Since the school system is a major means of accessibility to responsible and/or powerful social positions or occupations, then. . . .

Conclusion: Few persons in responsible and/or powerful social positions are as creative as they could be (if the school system was changed so as to admit or encourage creative talent). This conclusion also implies that fewer problems which require creative talent are being solved, and that society's efficiency of operation is less than maximum.

In the following, each premise as well as the conclusion is examined on the basis of available data. Despite the unavailability of survey data on the 'outputs' as well as on the quality of the school system (Baldwin, 1965; Cameron, 1959; Cohen, 1969; Enns, 1969, Keppel, 1966; Ingram, West, 1971), the exploratory and experimental data provided generally coincide and permit an image of the school system.

I. First Premise

This first premise refers essentially to the inconsistency between the characteristics of the school system and the characteristics of creative students.

A. Characteristics of the School System:

According to Johnson (1968), any educational program embraces four areas: goals, curriculum, instruction and evaluation. For the purpose of our demonstration, three of these four elements appear most relevant: Instruction, Curriculum and Evaluation.

(a) Instruction:

Since instruction essentially involves a relation between teacher and student, any reference to this relationship should include a consideration of the teacher's performance (Geer, 1968).

This relationship was particularly under scrutiny in the 20's and 30's when the so-called Progressive Education Movement criticized the various aspects of formal discipline in the classroom, the lack of interest in the student and the authoritarianism of the teachers (Cremin, 1961).

Unfortunately, according to some, reports in the 40's and 50's indicated that few changes had occurred. In 1958, Dr. Swift, Alberta Deputy Minister of Education, indicated that the school system was not being "shaped or significantly influenced, at least overtly enough to be readily observed, by any particular set of philosophical considerations" (Swift, 1958:30). Earlier, Prof. A. S. Mowat of Dalhousie stated that, in his view, the Canadian school system had been "little affected by Progressive Methods" when compared to the U.S.A. (Mowat, 1954:26). On the other hand, American studies of the 60's report very traditional attitudes towards the methods of instruction.

In his extensive review of the research literature on teachers' performance in classroom, Biddle (1969) concludes: "These observations point to a classroom that is 'traditional' in its orientations . . . the teacher of today has been little affected by a progressive idology on the concepts of an activity-centered education". Bellack (1963) found that the direction of the relationship teacher-student was primarily from the teacher to the student and usually originated from the teacher. In a study of 41 elementary school teachers, Hughes (1959) concluded that: "Generally, classrooms are predominantly controlled by dominative teacher behavior". In a study of 100 social studies classrooms, Flanders (1959) found that: "The teacher tends to dominate interaction by the use of direct influence with a resultant reduction in student participation". Similar conclusions were reached by Pugh (1967:635) and Friedenberg (1963).

One might describe the present instructional practices as traditional and teacher-oriented, despite some trends towards the use of discovery methods (Johnson, 1968:140) which, as explained by Bruner (1961:20-22) and Taba (1963:310-315), emphasize the role of the student in his education.

(b) Curriculum:

During the Progressive Education era, the structure and the content of the curriculum were to be centered around the child and

the individual. The curriculum was to be set up on the basis of principles promoted by such people as Rousseau, Froebel, James, Dewey, etc. (Brubacher, 1966:286-294). However, under the criticisms of what appeared to be anarchy in the school system (Lower, 1956:12-13), lack of consideration for social needs (Wild, 1955) and lack of consideration for the logical structures of certain fields of knowledge (Bruner, 1951:17-32; Johnson, 1968:148), "a heightened interest, almost hysterical in some quarters, in the formal content of education" was noted by Swift (1958). For example, although the system of elective courses had won public acceptance in the U.S. (Cordasco, 1963:130) and in Canada (Putman, 1925:112-115), core subjects were still seen as a necessity (Conant, 1959:47). One might describe the curriculum of the last five years as semi-rigid (i.e., includes elective and core courses) and logical (versus psychological). However, referring to the patterns of curriculum in America for the last 20 years, Connell *et al.* (1962) characterized the most widespread form as pre-planned subject-matter and neglect of learners' interests and critical thinking. Parsons (1959), Schellenberg (1965) and Horton *et al.* (1955) also used similar terms to describe their observations.

(c) *Teacher's Grades:*

Until very recently, the grading and examination systems were very much interrelated. As illustrated by Brubacher (1966:376): "Written examinations were the gates between grades, and these gates swung open and shut in a scheme of annual promotions". Despite early criticisms (Eliot, 1898:151-176, 253-269) of a system which "suppressed rather than took account of individual differences", the intimate relationship between grades and marks was only eliminated in the 60's in Canada (Morrison, 1931:81; Johnson, 1968:107). The so-called "non-graded school" or "continuous progress" system was introduced in Saskatchewan only in 1964, in Quebec in 1965 and in New Brunswick in 1966 (Stevenson, 1970:490; Johnson, 1968:138). On the other hand, the medieval system of examination referred to as the "recitation" (Brubacher, 1966:188) has not undergone much change. Among the seven general Royal Commissions on Education of the 50's and 60's, only one (the Hall-Dennis Commission) made definite recommendations for the abolition of the contemporary examination system (Stevenson, 1970:484) at the elementary and secondary school levels. The characteristics of these examinations have been described in many instances.

Considering the examination process, Bloom (1956) clearly stated that: "The most cursory reading of the standardized tests available or of teacher-made tests would indicate [that] a tremendous emphasis is given in our schools to remembering or recall". Torrance (1962) found a similar characteristic of the examination system in his "survey sample of the status of high school objectives". On a 100 point scale, cognitive and memory objectives accounted for 76 points and convergent thinking (right attitude, right solu-

tion . . .) accounted for 18.7 points, leaving 5.3 points for evaluative (comparing, judging) and divergent thinking (independent, constructive). In view of these data, one might describe the present marking system as still emphasizing information storage and retrieval, i.e. memory, rather than emphasizing information manipulation, i.e. mental skills.

B. Characteristics of Creative Persons:

The emotional, personality and cognitive characteristics of so-called creative people have been investigated on various occasions during the last twenty years. Among these investigations, perhaps the most comprehensive are those of Torrance (1962), Guilford (1967), Wallach and Kogan (1965), Getzels and Jackson (1962), and Barron (1961). These studies characterize the mental abilities of the creative person as being: curiosity, originality, problem-solving, etc. They characterize the attitudes and/or personality traits as: humour, playfulness, lack of rigidity, relaxation, inventiveness, independence of judgement, personal complexity, self-assertion, need for personal mastery over experience, rejection of suppression as a mechanism for the control of impulse and rejection of regulations by others. Although the studies which attempted to differentiate the creative person on the basis of personality characteristics are often contradictory (Foster, 1968), there is a consensus in terms of his mental abilities (Guilford, 1967:137-170). In fact, the creative person is the one who scores the highest on the thought products referred to as "divergent production". Divergent production can, according to Guilford and Torrance, be subdivided into four major mental operations referred to as: fluency, flexibility, originality and elaboration. Fluency refers to the ready flow of ideas conceptualized in terms of units, relations and systems. Flexibility refers to the readiness to change the direction of information: this mental operation produces concepts of 'classes'. Originality refers to the readiness to modify information: this mental operation produces the concepts of 'transformation'. Finally, elaboration refers to filling out ideas with details: this produces concepts of 'implication'.

C. Inconsistency of the Creativity-School Relationship:

Given the above data, it is inferred that the amount of conformism stressed by both the teacher-student relationship and the curriculum pattern is incongruent with the creative student personality traits and, that the emphasis of the examination process on memory and cognitive abilities might unduly penalize the creative student. These conclusions have been well supported through the experiment reported by Hutchinson (1967:419-427). Using a sample of 256 students, he found that "in the typical seventh grade social studies classroom using current teaching practices, verbal responses of the students are found primarily in the cognitive-memory classification, and productive thinking is primarily convergent"; "modifying instructional procedures . . . so as to treat students as thinkers rather than only as learners, elicits a wider range of verbal responses" (divergent and evaluative thinking

categories) and "makes no difference in measured growth of the subject-matter knowledge between the current and experimental teaching practices . . . as . . . three of the four experimental groups [with modified instructions] not only showed no loss but actually showed greater growth than the control groups". Hutchinson also reported that the students in the four experimental groups [compared with four control groups] showed a significant difference on four of the 10 measures of creativity, after the teachers and students were trained four days prior to the 15 days of experimental education, whereas the "control groups had no significant gains over the experimental groups".

If the basic conditions of creativity are compared with the 'normal' conditions of the school system, it is apparent that they are in disagreement with each other. Reviewing the related literature, Alamsah (1967:305-313) reduced the necessary conditions of creativity to four types: Motivation; Self-limitation; Receptivity and Competence. The first two conditions appear to be in flagrant contradiction to the present system as they refer consecutively to a "pull" effect which proceeds from the environment and to the individual's recognition of his talents and abilities and of his personal value system. In the above-described system, which is teacher-oriented and which emphasizes conformism and obedience, there is little to suggest that the system attempts to encourage the individual to create and to recognize his own ability through some kind of experience. The third condition is defined by Alamsah as openness to new ideas or viewpoints. In examining the school system one can hardly argue that it promotes new ideas, since it is in itself a quite rigid and closed system. The fourth condition described by Alamsah is perhaps the only one which is consistent with the creative student characteristics. Referred to as competence or knowledge or mastery of the tools for intellectual work, this condition certainly coincides with the curriculum characteristics of the school system. These inconsistencies between the creative student characteristics and the characteristics of the school system are further supported by the following finding. Pang's (1968) socio-historical survey revealed that Davy, Newton, Darwin, Comte, Locke, Edison, Pasteur, Watson, Fermi, Curie, Faraday, Einstein, Hobbes, Linton, Durkheim, Poincaré, etc., either nurtured a strong antipathy toward the school system or performed poorly.

If we agree with Polya, Rossman and others (National Bureau of Economic Research, 1962) that interest and motivation are crucial factors of invention or of creativity, the present data on the numbers and nature of underachievers and of drop-outs in our schools should be viewed as an indication of the possibility of an incongruence between the school system and the creative student's desires and aptitudes.

In 1960, Seeman (1960) reported that underachievers (under the average) were "significantly characterized and differentiated by the manifest needs for dominance (unwillingness to conform to the demands of the school situation) and for affiliation (greater interest and concern for social activity than for studies)". After a review of the literature on this aspect, he concluded that one-third of students of

higher education can be considered "under-achievers". Recently, an analysis of drop-outs of the Edmonton Public Senior High Schools (Paterson, 1968) found that two of the three main reasons for dropping out were lack of interest in school work (17.8%) and attendance problems (11.7%). Only 4.9% indicated "academic difficulties" as a reason. The total number of drop-outs for the period studied, September through December 1967, was reported to be 930: the reasons given by the drop-outs were among 18 "suggested by the school". At a more advanced level, Harvie (1969) found, among a representative sample of university undergraduates (University of Alberta) and a representative sample of students from an institute of technology (Northern Alberta Institute of Technology) who dropped out in 1967-68, that "lack of interest in courses" was the most frequent reason mentioned and accounted for 23.7% of the cases. The total drop-out population that year was more than 1,000.

Despite this bleak view of the school system a general consideration should be kept in mind: *not all creative students are penalized or suffer from the school-creativity incongruency*. As was noted by Wal-lack and Kogan (1965), and Yamamoto and Chimbois (1966), the students with above average I.Q. tend to adapt well to the school situation. Nor is it the case that *all* the students who drop-out, or otherwise suffer a poor school experience, would necessarily function at a higher achievement or "creativity" level if school classrooms were organised differently. Evidence shows that many creative individuals succeed in satisfying the school system's requirements.

II. Second Premise

This premise refers essentially to the nature of the school system as a major means of accessibility to 'powerful' social occupations.

A series of changes in the societies of the 17th, 18th, and 19th centuries brought about a school system which became a means of access to 'significant' social positions. The 'scientific revolution', the 'industrial revolution' and the 'political revolution' are the main recognized elements of Western civilization which introduced an organized system of thought referred to as 'liberalism', which promoted the access of all classes of individuals to the same basic education (Bruun, Commager, 1954:428-444; Stavrianos, 1966:185-240). Graves (1913:1) summarizes this historical context as follows: "In the eighteenth century are found the climax of the rebellion against the arbitrary authority of church and state, and the period of extreme individualism".

Charity and philanthropic schools such as those promoted by the "Society for the Promotion of Christian Knowledge" in England, those promoted by the "Brothers of the Christian Doctrine" in France and those promoted by the "Society for the Propagation of the Gospel" in America, etc., had initiated, during the 16th and 17th centuries, a trend towards universal education which cumulated into a system of public schools by the 18th century (Boyd, 1932:297-300; Graves, 1913:295-306). In Canada, public schools were first introduced in Ontario in 1871 (Graves, 1913:312).

Many thinkers of the 17th and 18th centuries perceived the threatening impact of universal schooling on class structure and on the distribution of power and wealth. Mandeville, for example, stated that "to make the society happy and people easy under the meanest circumstances, it is requisite that great numbers of them should be ignorant as well as poor . . ." (Brubacher, 1966:85). Similarly, Diderot affirmed that rigorous high academic standards should be applied in order "to temper the ambition of parents who are desirous of withdrawing their children from the subordinate occupations which they themselves follow, and of having them educated for priesthood, medicine or law. Nothing is more fatal to society than this disdain of parents for their own calling and these senseless migrations from one state in life to another." (La Fontainerie, 1932:300).

Today, formal education is still a necessary prerequisite for admission to most of the more powerful social occupations. The finding by Warner and Abegglen (1955:140-141) that there is an inverse relationship between the educational attainments of executives in an industry and the rate of growth of that industry recently suggested to Lenski (1966:393) that educational achievement was considered a symbol of membership in a favored class whose members are more concerned with the advancement of their personal and class interests than with the firm involved. Eckland's survey (1965:735-746) shows that when father's occupation and student's intelligence were controlled, formal educational attainment explained the concentration of the graduates in high status jobs, while those who were not graduates were in low status and middle status occupations. Similarly, when Porter (1961:486, 492) defined the Canadian Economic Elite as consisting of 985 people "who could be considered the most influential industrial and commercial leaders in Canada", it was found that the majority (56%) had university education.

More recent data support the same conclusion. On the basis of longitudinal study findings, Sewell *et al.* (1970) concluded that educational status attainment appears to have a "substantial impact on early occupational status attainment". On the basis of 1968 data, Spaeth (1970) found that the strongest predictive academic variable to the prestige of the job held was attendance at graduate school. Blau and Duncan (1967:157) went even further when they concluded that "the proportion of men who experience some upward mobility increases steadily with education from a low of 12% for those reporting no schooling to a high of 76% for those who have gone beyond college". As Dreeben (1971:82-119) partly explained, because society becomes more industrialized and automated, a higher level of occupational specialization is needed and such skills can hardly be developed, at present, without the school system.

Whether it is competence gained through appropriate training or authority gained through the 'masses' conviction "that the performance of the occupational skill requires specialized education; that those who possess this education, in contrast to those who do not, deliver a superior service" (Greenwood, 1962:211-212), the fact remains that education is a key to social powers and privileges which, in addition, bring other powers and privileges (Nosow, Form, 1962:373-375).

III. Conclusion

If one accepts the two above premises, the conclusion seems obvious: many creative individuals who could hold responsible and powerful positions will not do so, due, in part, to the school system. The consequence of this fact, in the functioning of society, is apparent: fewer problems will be solved, or they will not be solved as creatively as they could be.

The necessity for the individual, as well as for society, to develop creative talent and to use it has been stressed in various ways in the last twenty years. After reviewing historical records, Torrance (1962) concluded that cultures had collapsed because of the failure to utilize "intelligent, imaginative methods for solving . . . problems". Similarly, Hagen (1962:30-35) concluded in his examination of social change through the centuries that as "technological advance requires doing new things, it requires also the creation of new economic, political and social organizations and relationships or the adaptation to new functions of old organizations and relationships". In regard to human relationships, Coleman explains ". . . in our work, in our relationships with other people, in our role as citizens, we must use our full intellectual capacities to analyze the problems we encounter and work out the best solutions. Indeed, even some of the problems for which we do have habitual solutions merit a more thoughtful approach than we gave them, for our habitual ways of seeing and doing things can be outmoded with changes in circumstances and in ourselves" (Coleman, 1960:377). In fact, research suggests that in order to solve the numerous problems presented daily through interpersonal behavior, the individual must use at least six types (units, classes, relations, systems, transformations, and implications) of creative abilities (Guilford *et al.*, 1968:155-164).

In discussing the nature of scientific discoveries, the notion of 'creativity' is stressed in more than one instance by natural scientists such as Carnap (1966) and Flanagan (1959), as well as by behavioral scientists such as MacIver (1942) and Kaplan (1964). They agree with Einstein and Infeld that "to raise new questions, new possibilities, to regard old problems from a new angle, requires creative imagination . . ." (Einstein, Infeld, 1938:95).

Concerned over the "changing demands of the society" and the "supply of talent", a U.S. Committee on the Identification of Talent was created in 1951, with its first aim being: the research on "non-academic" types of talented behavior (McLelland *et al.*, 1958). Later, in 1958, the Rockefeller Commission on Education frankly concluded: "It is tempting to treat the problem of highly trained manpower in terms of the specific shortages which occur from time to time. But the true difficulty lies deeper. It is not a shortage, now of engineers, now of economists, that lies at the root of the problem. *It is the constant pressure of an ever more complex society against the total creative capacity of its people*" (Rockefeller Brothers Fund, 1958).

Referring to a "crisis of intellectual poverty" and a "knowledge problem", Cohen (1969) and Clark (1969) emphasized the need to develop the creative talent and to revise the whole educational process in terms of individuality, mobility and flexibility. It is not simply a coincidence

that the recommendations of the Hall-Dennis Report on Education in Ontario (Hall, Dennis, 1968) included the following four points: (1) "Emphasize the creative nature of the learning process through methods of discovery, exploration, and inquiry" (Recommendation 19); (2) "Provide learning experiences which are pertinent to the personal needs and interests of the learner" (Recommendation 20); (3) "Provide learning experiences that permit students to use content as a tool for discovery and exploration (Recommendation 21); (4) "Develop skills in research, organization and deduction throughout the learning program" (Recommendation 22).

Similarly, the Parent Commission in Quebec (1963-66) recommended that "teaching was to aim at individualized instruction, overall development of the child, and the stimulation of creativity among the students" (Stevenson, 1970:476).

Formal education being a key to privileged social positions and to social power, it is crucial for society's functioning that the school system be modified so as to encourage those individuals with "divergent" mental abilities (creativity). This recommendation is suggested by various studies of the school system and by studies regarding the nature of social functioning.

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The Soviet Conquest of Illiteracy

In the period 1917 to 1934, from being a country where almost ninety percent of the population consisted of illiterate peasants, the Soviet Union was transformed into an emerging industrialized society, where almost ninety percent had achieved literacy. This was the outcome of a massive campaign which involved millions of voluntary workers and a number of voluntary societies. The campaign and its effects are described in some detail, with special concern for organizational problems, the preparation of learning materials, the motivations of teachers and learners and for the raw statistics as given in official reports.

The 1897 census revealed the extent of illiteracy in Tsarist Russia.¹ Over the next twenty years the situation changed but little owing to the declared policy and practices of the Tsarist government. Official figures for 1905 establish that the Ministry for Popular Enlightenment maintained 782 Sunday and evening schools for adults with a total enrolment of 40,000. In addition, there were 549 voluntary schools which catered for 36,714 students. The Orthodox Church maintained 260 Sunday schools with an attendance of 28,048 adult illiterates. This meant that there was one adult school for approximately every 150,000 illiterates. The total expenditure on these schools was roughly about nine cents per student per annum.²

In 1914 there were 101,917 primary schools and 1,654 secondary schools in the whole of the Russian Empire, located almost exclusively in the towns. There were practically no schools at all for the children of peasants, nor for their parents—that is to say, for the vast bulk of the Russian population.³

The Bolshevik section of the Social Democratic Party inherited the strong interest in popular education which characterized all leading sections of the revolutionary movement. Lenin, his wife Krupskaya, Krzhizhanovski, Menzhinski, and many other leading Party workers taught in Sunday schools and evening schools at one time or another. But although many thousands of students were involved, these part-time efforts represented at best an attempt to irrigate the vast desert of Russian illiteracy with plates of alphabet soup.

One of the first acts of the Bolshevik government on assuming power was to set up, on 9 October, 1917, a State Commission concerned with Popular Enlightenment. This was under the chairmanship of Lunacharski. N. K. Krupskaya was in charge of out-of-school education (that is, work with illiterates and semi-literates) and of political education. She formulated the tasks of the literacy schools as follows:

It is essential to give the student not only the key to knowledge, but to show him the doors which can be opened with the help of this key. We must aim at widening the mental horizon of the student as well as giving him the techniques of literacy.⁴

Lenin put forward the slogan: 'Every cook must learn to govern the State'. But the first thing the cook must learn was the alphabet for, as Lenin also said, the illiterate person must stand for ever outside of politics.⁵ The education of illiterates was always seen by the Russian communists as a means towards personal emancipation. But, for them, personal development in the true sense necessarily included preparation for political life and for social action.

After the successful revolution, the whole Party was therefore organized for this basic task of eliminating illiteracy. From the beginning of the Revolution libraries were opened, workers' clubs, schools for illiterates, people's universities. Provision was made for the "cultural development of the armed forces". Unfortunately, statistics for 1917-18 are not available, it is therefore impossible to obtain a complete picture of the work accomplished in this earliest period. But the pages of two journals devoted to describing and organizing this work, *Narodnoye Prosveshcheniye* (Popular Enlightenment) and *Vneshkolnoye Obrazovaniye* (Out of School Education), attest to the scale and success of these efforts.

In March 1918 the Eighth Plenum of the Communist Party of the Soviet Union adopted its new programme. In the sphere of adult education the following needs were recognized:

Many and varied types of government aid for the self-taught workers and peasants in the construction of a network of extra-school institutions—libraries, adult schools, people's homes and universities, courses, lectures, cinemas, etc. . . . The development of the widest propaganda of communist ideas and the utilization for this end of the apparatus and resources of governmental power.⁶

The plan for educational activity in the villages included three aspects: communist propaganda, general education (literacy) and agricultural education. It was laid down that "general education, in-school and out-of-school, must be closely linked to communist propaganda, There is no form of science or culture which cannot be linked with the great ideas of communism."⁷ At the First All-Russian Congress on Extra-School Education in May 1919 (Lenin spoke, referring to 'free education, free development')⁸ it was agreed that all adult schools must take on the task of developing the class-consciousness of the workers and peasants, of transforming them into active workers for socialist construction and world communism. A system of literacy schools, to involve illiterates from age 15 upwards, was visualized. They were to attend for three months. A system of elementary schools for adults was also planned, these would provide a broader based curriculum to be studied for longer periods.

On 26 December, 1919, Lenin signed the famous decree *On the Liquidation of Illiteracy Amongst the Population of the Russian Soviet Federal Socialist Republic*. This decree completed the plan for the basic tasks drawn up by the People's Commissariat of Education. In defining the measures of urgency facing the new government they projected compulsory education for all children; the establishment of a system of teacher-training; a unitary system of lay schools; equality of instruction to the highest level for all citizens; the struggle for universal literacy.⁹ Lenin's decree of 26 December, 1919, declared:

All illiterate citizens of the Soviet Republic aged between 18 and 50 years are required to learn to read and write in their native language, or in the Russian language, as they prefer. Tuition will be provided in the existing state schools and in certain others which will be established for the illiterate in accordance with the plans of the People's Commissariat of Education.¹⁰

The decree was distributed in hundreds of thousands of copies in the factories and villages. Slogans and posters to launch the campaign were drawn up by artists, poets and writers. Slogans such as the following were highly commended as striking the essential note of simplicity and urgency: 'Down with Illiteracy!'; 'Illiteracy is the twin sister of national ruin!'; 'It is the citizen's right and duty to be literate!'; 'Literacy is the road to Communism'.¹¹

Hundreds of thousands began to study, both young and old. Voluntary teachers, drawn from the ranks of school teachers, office personnel, educated workers and trade unionists, senior pupils of secondary schools and demobilized servicemen, were paid at rates equivalent to a teacher's salary. Illiterates, whether men or women, were allowed two hours off work every day with full wages to attend classes. Clubs, factories and offices set aside special rooms for study. It was made a criminal offence to prevent an illiterate from attending school. The trade unions, communist party, young communist league and women's organizations were very closely associated with the work. That spirit of enthusiasm so characteristic of the early days of the revolution took hold of the masses of the people in relation to the government's plans, Krupskaya noted that it was unnecessary actually to expound the benefits of knowledge: the real problem was to provide adequate facilities to satisfy the general craving for culture and the thirst for knowledge.¹²

On 19 June, 1920, an *All-Russian Extraordinary Commission for the Liquidation of Illiteracy* (Gramcheka) was set up to co-ordinate the efforts of all engaged in the work. It had very extensive powers: to register the illiterates in their homes and factories, to devise appropriate methods of instruction for the adult illiterate, to prepare textbooks and reading books, to enlist the help of people specially qualified to carry out the work. Lenin's slogan, "to mobilize every literate for the war against illiteracy", swept the country. Activists, in many cases themselves only recently literate, threw themselves into the work. Agitators in factories, villages and offices exerted psychological pressures of all kinds on literates and illiterates alike to further the campaign. On 2 October, Lenin spoke to the Young Communist League:

Everybody is talking about abolishing illiteracy. You know it is impossible to build a Communist society in a country where the people are illiterate. It is not enough for the Soviet Government to issue an order, nor for the Party to launch a precise slogan, nor even to assign a certain number of the best workers to this job. The younger generation must take up this work. Communism implies that the youth, that is, the men and women of the Young Communist League, shall say: This is our task. We will unite and go into the country and abolish illiteracy.¹³

Lenin managed by this appeal to tap the energy and enthusiasm of 400,000 members of the League, enrolling them in a nation-wide crusade against backwardness and superstition.

The Extraordinary Commission had powers to prosecute illiterates who refused to take advantage of the facilities available. A fine of up to \$250 could be levied.¹⁴ But the pressures exerted were of a moral and social character, the legal sanction was held in reserve for especially obdurate and recalcitrant citizens. The practice of forming mixed classes, of illiterates and semi-literates, was soon abandoned. A system of 'streaming' by age and achievement was introduced. This was justified in terms that older people did not like to be in classes with young illiterates where their illiteracy and difficulties of understanding were exposed. It was discovered that not only those who made little progress but also those who were in advance of the others became discouraged and gave up before full literacy was attained. The adult students were therefore divided into groups according to whether they were totally illiterate, whether they could read but not write, whether they could read and write but knew no arithmetic. Those unable to attend regularly were given individual instruction at home or at work. In the case of illiterate nomads, as in Central Asia, teachers would follow the tribal group around until everybody was literate.

On 12 November, 1920, the *Glavpolitprosvyet* (Supreme Committee for Political Enlightenment) was set up as an organ of the People's Commissariat of Education. On 3 November, 1920, Lenin defined the tasks of political enlightenment: he returned to the theme once more at the congress of *Politprosvyety* the following year, on 17 October, 1921:

While we have a phenomenon such as illiteracy in our country, it is very difficult to say anything about political education. Literacy is not a political problem, but the very foundation without which it is impossible to speak about politics at all. The illiterate remains right outside of politics; to begin with it is necessary to teach him the alphabet. Failing this, it is not possible to have any politics at all; failing this we can have rumours, gossip, fairy-tales, prejudices, but we cannot have politics.¹⁵

The Tenth Plenum of the Communist Party of the Soviet Union had given the *Glavpolitprosvyet* the task of organizing agitational and propagandist work. This was considered to be possible only by combining this work with that of raising the level of culture in towns and villages. In other words, the question of literacy was involved. In 1922 it became possible to discover the extent to which this task had been effectively achieved on the basis of the report of the 1920 census which was published in that year. Lenin compared the literacy figures for 1920 with those of 1897.¹⁶

TABLE 1
LITERACY FIGURES—1897 and 1920 COMPARED

	Literates per thousand					
	Male		Female		Both	
	1897	1920	1897	1920	1897	1920
1 European Russia	326	422	136	225	229	330
2 North Caucasus	241	357	56	215	150	281
3 West Siberia	170	307	46	134	108	218
Totals	318	409	131	244	223	319

Lenin’s comment is typical of his political realism:

While we are chattering about proletarian culture and its relation to bourgeois culture, life presents us with figures which show that things are bad with us even in regard to bourgeois culture. It turns out, as was expected, that we are still very backward in respect of general literacy and that our progress, even compared with Tsarist times, has been too slow. This should serve as a severe warning and reproach to those who are soaring in the empyrean heights of ‘proletarian culture’. It shows what imperative spade-work still confronts us if we are to reach the level of an ordinary West European state. It also shows us what an enormous amount of work confronts us today to achieve anything like a real cultural level on the basis of our proletarian gains.¹⁷

In that part of the report on the New Economic Policy which dealt with the tasks of the Political Education Departments, which Lenin delivered in October 1921, he was even more scathing about the work of these *Politprosuyety*:

You adopted the title of political educators. When you took this name you were warned not to use such a high-sounding title, but something more modest. But you insisted on being called political educators, and it implies a great deal. You did not undertake to teach people the alphabet; you undertook to educate them politically. You may be told, “It’s a good thing you are teaching people to read and write and carry on economic campaigns.” That is all very well; but it is not political education, because political education means summing up all this.¹⁸

The First All-Russian Congress for the Liquidation of Illiteracy convened in Moscow, in February 1922.¹⁹ There were 146 delegates drawn from 44 provinces, from various army groups, and from central institutes. The executive committees of a number of trade unions were also represented. It was now just over two years since Lenin had signed the literacy decree. A tremendous amount had been accomplished in this short time. More than five million people had become literate as a result of the ‘crash’ programme. In the Red Army, illiteracy had been reduced from between 65 and 70 percent to something between 5 and 6 percent.

If we recall at this point that the Soviet Government had been involved in civil war and in repelling the armies of intervention throughout this time, the figures represent a tremendous achievement. It is true that in the case

of non-Russian nationalities the decrease in illiteracy was very much less. This was in part because the work with these peoples was hampered by the fact that many of the nationalities were not only without a literature—in some cases they even lacked an alphabet. As a matter of fact, the non-Russian groups were hardly involved in the first stages of the campaign: their illiteracy remained almost total. As the 1920 census revealed, another black spot was the position of women. Except in European Russia, and in certain national groupings which had a long-established cultural tradition they lagged far behind the men.

The congress delegates decided that the special *likpunkty* ('illiteracy liquidation points') which had been set up anywhere at all where people could be contacted—in a factory or office, the hallway of an apartment house, the landing of a tenement, even on a street corner in summer—should continue to operate. It was proposed that *likpunkty* should function for four months, and that the regular schools for the poorly literate should work a six month session, six to eight hours daily. Besides readers and textbooks, the delegates recognized that other teaching aids could be usefully employed. Posters and broadsheets, cards, calendars, newspapers, reference books, and circulating libraries should be made freely available to students. Having in mind the prime object of literacy education, to involve the masses in cultural and political activities, special libraries were made up dealing with political, social and cultural affairs, and special newspapers were published in a simplified style and vocabulary for the semi-literate and newly literate adults.

With respect to the teaching method deemed appropriate in the teaching of illiterate adults, the Congress recommended 'as the practical and theoretical basis of this work the method of unbroken words'. This is what used to be known as the 'look-and-say' method. Certain mistakes which had been made were pointed out. Most commonly this consisted in the use of the same techniques and materials with the adult student as were used with the child beginning school. This error had already been strongly criticized by the Central Committee of the Communist Party: the Congress re-affirmed this criticism.

With reference to the political side, certain decisions were taken. It was re-asserted that the elimination of illiteracy was intended to lay the foundation for political enlightenment. Responsibility for the campaign was therefore placed on the *Glavpolitprosvyet*. It was also recognized that urban labour productivity depended on general literacy: in the country literacy had to be linked with agricultural education. The dissemination of elementary facts about hygiene and disease in both town and country would help to increase labour productivity and would destroy superstitious views and practices. To enable a wider participation in the campaign it was proposed that *Gramcheka* (the illiteracy commission) should establish a connection with the Communist Party, Trade Unions, the Red Army, Young Communist League, *Zhenotdel* (the Section of Party Organization for Social and Political Work amongst Women) and with the corresponding organizations of the different national minorities. The decision was taken by Congress to eliminate illiteracy in the Red Army by 1 May, 1922.

The problem of the almost total illiteracy of the non-Russian national

minorities had now assumed great political importance. In many cases, the main difficulty was the absence of a written language. In addition there was an almost total lack of suitable materials (texts, readers, newspapers, etc.) in non-Russian languages, as well as a dearth of teachers with a knowledge of the language and some familiarity with the life of the particular national minority. It was decided as the basic policy that instruction must be in the native language. This, of course, was an absolute reversal of the Russification policy of the Tsars and followed directly from the declared aim of one hundred percent literacy.

At this period the Soviet Union numbered over 140,000,000 people, of these, 65,000,000 were non-Russian. The policy of Tsarism had been to destroy the political organizations of the subject races, to forbid absolutely, or drastically to restrict, the use of the native language in schools, courts and in the administration. It sought to cripple the native culture and to keep the great majority of the subject people in a state of ignorance. The theses accepted by the Tenth Party Congress in 1921 declared the policy of the Soviet Government to be that each national minority should establish its own Soviet State system, in forms consistent with its own national character. Lenin's slogan was: 'Nationalist in form, socialist in content'. This meant that the courts and other administrative and executive organs should function in the native language and be recruited from the local people; that a popular press, schools, theatres, clubs, cultural and educational institutions should be established in the native language. A roll-call of some of the national groupings incorporated in the Soviet Union at this time will give some indication of the magnitude of the task the Soviet Government had assumed: Ukrainians, White-Russians, Kirghiz, Uzbeks, Turkmens, Tadjiks, Azerbaidjanis, Tatars, Bokharans, Khivans, Bashkirs, Armenians, Chechens, Kabardians, Ossetians, Circassians, Ingushes, Karachais, Balkarians, Kalmucks, Karelians, Avarians, Darghis, Kazikumukhians, Kurins, Kumyks, Marsis, Chuvash, Volga Germans, Buryats, Yakuts, and many others. Some of these national groupings were quite small, in some cases less than a thousand. In others, whole nations with a long history and a highly-developed cultural tradition, spread over a vast territory, and including many millions of individuals, were involved.

The Second Congress for the Liquidation of Illiteracy took place between 20 and 24 May, 1923.²⁰ Representatives of 45 provincial governments and 17 republics were present, as were delegates from the Red Army and Trade Unions. The reports bore a different aspect to those of the preceding congress. In each case, the basic reports were made jointly, as from a work-place and also from an organization such as the Trade Union, Red Army, Militia, *Zhenotdel*, Young Communist League, and so on. This is a sign of a broader participation in the organization of the campaign at grass-roots level. The Congress went on to take the important step of adopting a central plan of campaign which had been worked out by the *Illiteracy Commission*. Control dates by which certain basic tasks should be accomplished were set up. For instance, 7 November, 1927, was set as the deadline for the elimination of illiteracy: in towns everybody between 18 and 35 years; in villages all between 14 and 30 years. Similarly, all members of Trade Unions were to be literate by 1 May, 1925. The

elimination of illiteracy in the Young Communist League and *Zhenotdel* was regarded as being specially urgent.

The campaign was to be waged under the single leadership of *Gramcheka*. It was resolved that more than a thousand schools should be set up to train teachers of adult illiterates.

In 1923 a voluntary organization called the *Down with Illiteracy Society* was founded. Its object was to help in every possible way to promote the campaign. It directed the work of thousands of *Kultarmeitz* or 'soldiers of culture'. Membership was open to all citizens over 18. The Society was especially active in the villages but it organized branches in factories and offices as well. In 1924 Mikhail Kalinin, President of the Soviet Republic, was elected chairman. The Society published textbooks and readers. It also published special newspapers for its members and for the newly literate. Members paid dues and carried on the work of combating illiteracy as unpaid volunteers. The Society was given considerable support by the State. On 30 May, 1925, the Central Committee of the Communist Party published a decree outlining the tasks and successes of the society.²¹

The principle of voluntarism, of which the *Down with Illiteracy Society* (O.D.N.) is a typical representative, assumes an interesting form in the Soviet Union. Normally the voluntary organization has a massive membership: this includes a minority of Party members. There is a small annual subscription. Immense numbers of people are involved, but at a fairly superficial level. The voluntary organization strongly supports particular campaigns which have been declared to be urgent and of fundamental importance by the government. The voluntary movement is closely linked with the short term, and with the final aims, of the Communist Party. It is closely guided by the policies and personnel of the Party, although in the normal way decisions are arrived at freely by the membership.²²

At its first congress in 1925 1,600,000 active members were represented. Large numbers of these were also members of the Young Communist League which had taken the literacy campaign over as its special task. At this time the O.D.N. Society had 28,000 'cells' of active workers. It had published 5 million readers and a library for the newly literate. It assisted the People's Commissariat of Education (*Narcompros*) to organize local conferences to discuss organizational problems, the kinds of teaching materials needed, and the methods appropriate to the adult illiterate.

In 1925 an All-Union Methodological Conference was organized. The main purpose of this conference was to evaluate programmes and methods of teaching and to discover and declare the specific features of method appropriate in teaching adults. As has been already indicated, the major difficulty arose from the fact that many teachers were transferring unthinkingly their school techniques and materials to the adult situation. Krupskaya laid down the basic principles of adult teaching, as follows:²³ first of all, there must be *economy* in the use of time. As much as possible must be given in the shortest possible time. This means that the material of the lesson must be organized so that the student makes maximum progress. At the end of each lesson he must be told exactly what he has learned. Secondly, the material must be *interesting*, and related to the

student's future reading habits. This implies that adults should graduate to newspaper reading at an early stage. There is therefore a basic need for simple, specially designed newspapers for the poorly and newly literate. The students should copy into their notebooks short articles from these special newspapers, they should also record their own thoughts in short independent essays. Thirdly, the students should be trained early in the *use of books*. They should learn to use dictionaries, reference books, catalogues, and so on. Fourthly, literacy teaching should be linked closely with *other cultural activities*. In particular, Krupskaya advocated the reading of folk-tales.

An analysis, on a commonsense or "holistic" level, of the psychological features of the adult learner was presented at this conference as a guide to the most appropriate method of instruction. The psychology of reading and its relation to writing were worked out. The 'phonic' method was regarded as fundamentally unsound. The superfluous movements of the speech organs involved in pronouncing separate letters or groups of letters hampers correct pronunciation. The method of recognizing and pronouncing 'whole words' was considered to be superior. But, after mass trials, this method too was discovered to be relatively ineffective:

The whole-word method ('look-and-say' JML) proved unsuitable for Russian schools, especially for the tutoring of illiterate adults. This was for the following reasons: the process of instruction becomes purely mechanical; the method relies chiefly on memory and calls for the learning of many words by heart; it takes too long.²⁴

A method which combines the phonic and the 'whole-word' methods was worked out. This was called the analytic-synthetic method. It consists of dividing the word into syllables, and the syllables into sounds. The word is made up by the student from special cardboard letters, it is read and written down. This method places great stress on individual work and the materials were so constructed that each student could proceed at his own pace. The method has the major advantage that it frees the adult from rote-learning, this being the main defect of child-oriented techniques. Methodologically speaking, the most relevant feature is that it links up very closely the two processes of reading and writing. It allows the two skills of reading and writing to develop together gradually.²⁵

The problem of relating the teaching of reading to the interests of the adult and to the needs of the State was solved in characteristic fashion. The first textbooks and readers were intended for illiterate Red Army men. These consisted of slogans designed for simplicity and for developing morale and 'political consciousness'. At this date they appear extremely crude. But if we recall that a large proportion of the students had only recently changed their peasant shirts for Army uniform, and that all of them were understanding print for the first time, we can begin to understand the enthusiasm with which they were studied by the newly literate soldiery. The following were some of the slogans used in these reading books:

My pobedyim ! (We are winning)

Rabov nye budyet u nas ! (There will be no exploitation in our land)

Chem silnyeye krasnaya armiya, tem blizhe voiny!
(The stronger the Red Army, the shorter the war)

Soyuz rabochikh i krest'yan nyenobedyit!
(The union of workers and peasants is invincible)

Kommunizm—nash fakyl pobyedy!
(Communism is our torch of victory)

In the connected reading passages the various phases of the civil war were explained in simple terms, from the point of view of the Bolshevik government.²⁶

Readers and other materials were published in the language of the different republics: Ukrainian, White Russian, Tatar, Kirghiz, Uzbek, Tad-jik, Mariiski, even Yiddish. The magazine *Down with Illiteracy* had been published twice monthly since 1920. It was followed in 1925 by *The Peasant Newspaper for New Readers*, which was published six times a month. This was a self-educator, with a large number of illustrations. Study guides were also published. In 1925 a complete peasant library (*'Krest'yanskaya Biblioteka'*) was published in many pamphlet-volumes.²⁷ These covered a variety of topics including, for example, the precautions to be taken to prevent the spread of venereal disease and other diseases, a description of the metal plough and other advanced agricultural techniques and how they could be applied to the Russian earth, propaganda for atheism, and what was obviously the central piece in the collection, a very detailed account of the history of Russia from emancipation until the Revolution, presented from the point of view of the peasant. This booklet of 72 pages was entitled *Lenin and the Peasantry*²⁸ and dealt in very plain language with the condition of the peasant under Tsarism. It sought to establish that Lenin's policy throughout his revolutionary activity had been in the best interests of the peasant masses. As a sample of the style and approach we cannot do better than quote from the account of *'How Lenin became ill and died'* which opens the argument. The peasant is informed that Lenin died of arterio-sclerosis. (Actually he died in 1923 after a succession of strokes due to cerebral haemorrhages, probably complicated by the gunshot wound of his attempted assassination by a Social Revolutionary). This arterio-sclerosis was hereditary: his father died of the same complaint, and his mother also suffered from it. (Ilya Nikolayevitch Ulyanov died from cerebral haemorrhage like his son; the mother died at the advanced age of eighty-one, of an unspecified cause.) Vladimir Ilyitch, according to our author, prepared the ground for this disease by his 'inhuman mental work'. He 'wore his brain out'.

Our dear leader died because he did not conserve his energies: he worked all his life; he was in a hurry, knowing no rest from labour. He perished as a result of his great work of liberating the toilers.²⁹

The writer, M. Kuznetsov, recounts in simple terms how Lenin became a revolutionary. He goes on to show how from his earliest years Lenin realized that the workers and peasants must unite to overthrow the oppression of Tsardom. After a homely account of Lenin's struggle against the landlords and capitalists, the author skilfully draws the reader towards the

conclusion: collective work, a still greater intensification of party work must take the place of the dead leader. The party must carry out the testament of Lenin. Workers by the thousand are coming into the Party and the peasants too must unite around the Russian Communist Party.³⁰

The growth of the campaign in these early years is shown in the following figures:³¹

TABLE 2
PROGRESS OF THE CAMPAIGN (1922-1925)

Year	No. of illiterates taught
1922	463,300
1923	123,100
1924	567,200
1925	1,383,000

According to figures issued by *Glaupolitprosuyet*, the distribution of literacy by age on 17 December, 1926, in European Russia was as follows:

TABLE 3
PERCENTAGE OF LITERACY ACCORDING TO AGE GROUPS

Age group	Total	Literate	Illiterate	Percentage literate
0- 7 yrs.	17,404,889	140,185	17,264,704	0.8
8-11 yrs.	6,256,923	2,949,794	3,307,129	47.1
12-15 yrs.	8,617,068	5,565,681	3,051,387	64.5
16-34 yrs.	26,797,078	18,456,297	8,340,781	68.9
35-49 yrs.	11,822,509	6,006,568	5,815,941	50.8
50+	11,095,261	3,053,174	8,042,087	27.5

As in the figures published in 1897, illiteracy was worst amongst village women, village men and town women. This is brought out in the following figures:³²

TABLE 4
PERCENTAGE OF LITERACY ACCORDING TO LOCATION

Age Group	Town Males	Town Females	Village Males	Village Females
8-11 yrs.	78	76.7	49.5	34.9
12-15 yrs.	91.7	83.3	72.5	47.4
16-34 yrs.	94.7	83.7	81.6	47.4
35-49 yrs.	90	62.2	71	21.1
50+	74	39.4	42.2	7.5

At the beginning of 1926 adults of the following nationalities were receiving instruction in reading and writing:³²

TABLE 5
PROVISION MADE FOR NATIONAL GROUPS: 1926

Ukrainian SSR	540,900
White Russian SSR	36,000
Azerbaijan SSR	29,600
Georgian SSR	67,600
Armenian SSR	18,800
Turkmen SSR	7,700
Uzbek SSR	26,300
Tadjik SSR	500
Kazak SSR	23,200
Kirghiz	7,500

Special provision was made for mothers of large families and others unable to visit even the *Likpunkty* for instruction. Special creches were established, and teaching was given in quite small groups. Individual tuition at home by volunteers was also common. It was a principle that no one should be deprived of the opportunity of literacy because of his or her living or working conditions.

Literacy teaching was linked to more advanced instruction. Courses and schools were organized to raise the *political* level of the population in terms of Communist principles. Provision was also made for raising the general level of education, especially of workers, peasants and Party workers. For example, one-year and two-year general education courses and 'political literacy' schools were organized in great numbers to further the education of the newly literate. Promotion schools, *Rabfaks* (workers' faculties in Universities and Institutes of Higher Education), Communist Party schools for Marxist education *Soupartshkoly*) involving hundreds of thousands of active workers, mostly Communist Party members, were established.³³

Throughout the early years of the Revolution a millennial enthusiasm surrounded the campaign to eliminate illiteracy. Literacy was considered the key which would open all the doors of science, culture and prosperity. Lenin had proclaimed the notion of building a Communist society to be unthinkable with an illiterate population. It seemed to be a corollary that literacy teaching was bound up with progress towards Utopia. To the insatiable curiosity of the Russian *muzhik* was added the dimension of Messianism: these were the subjective driving-forces of the campaign.

In late 1926, at the Fifteenth Party Congress, the question of education came up in the context of the problem of bureaucratization of the State apparatus. Immediately before the conference Max Eastman had published what purported to be Lenin's last will and testament in the *New York Times*.³⁴ This had been written when Lenin's work had to be broken off completely due to ill-health. Since 1921 he had observed the growth

of the bureaucracy under Stalin. In 1923, in the middle of his long illness, he had written:

Our state apparatus is very largely a survival of the old, and has least of all undergone serious change. It has only been slightly repainted on the surface, but in all else it is a typical relic of our old state apparatus.³⁵

At the Fifteenth Congress the struggle between Stalin and the Opposition was waged with special virulence, probably as a result of Trotsky's incautious remark in the Central Committee that Stalin was playing the role of 'gravedigger of the Revolution'.³⁶ Trotsky spoke at the Congress of the 'bureaucratic deformation' of the workers' state.³⁷ Stalin also referred to these matters in his speech:

The cultural development of the working class and the toiling masses of the peasantry does not only mean the development of literacy, although literacy is the basis of all culture. Besides this it means the acquisition of habits and the ability to participate in the work of directing the nation. It is the basic lever of betterment of the governmental and all other apparatus. In this lies the significance and meaning of Lenin's slogan on the cultural revolution.³⁸

The same Congress directed all State institutions to proceed with drawing up a Five Year Plan of development. The directives recognized that industrialization and collectivization could be achieved only if there were an extensive and decisive raising of the cultural level of the industrial workers and peasants. The development of the national minorities was also a basic pre-requisite to socialist industrialization. The economic revolution could be achieved only on the basis of total literacy. Equally basic was an increase in the provision of general education and the greatest possible extension of technical education. The need for qualified specialists and scientific workers drawn from the common people was stressed as a pre-requisite for the development of a modern, industrial state.³⁹

Following the Party Congress there was a significant increase in the activity of organizations specially devoted to the elimination of illiteracy. The Young Communist League in particular, at its Seventh Congress, was active in passing resolutions: to eliminate illiteracy in the *Komsomol* itself, to mobilise and train 1,000 *Komsomols* for literacy work, and to ensure that each *Komsomol* should find and teach at least one illiterate. A month's campaign was projected for August 1928 to implement these decisions. As a result, thousands of young people became active in the *Down with Illiteracy Society* as volunteer teachers and propagandists. Kalinin, Krupskaya and Maxim Gorki played a very active role in the campaign, writing many articles and addressing hundreds of meetings on the subject of illiteracy.⁴⁰ The slogan: Literates—teach one illiterate! became a central theme and helped to give the campaign both a national and individual impulse. The political significance of the work was kept in the foreground. Kalinin wrote:

In literacy teaching, all the work must be permeated by the political views of the revolutionary proletariat—otherwise expressed, by the revolutionary theory of Marxism-Leninism.⁴¹

From 1927 a new feature of the campaign was the special attention

given to semi-literates and to the newly literate, to prevent any slipping back. In thousands of cases previously, no provision had been made to ensure that the new skills should be consolidated by use until they became habitual. Many 'soldiers of the cultural army' had been sketchily trained or had received no training at all. Thus the massive figures of millions of successes, taken at face value, concealed the reality that thousands of clients were very poorly educated in the new skill and that many thousands soon relapsed into semi-literacy or illiteracy. This accounts in part for the increased stress on the ideological aspects of literacy teaching. The newly literate worker or peasant was encouraged to see Soviet Russia as a new and exciting society emerging from the semi-feudal realm of darkness of Tsardom.

Based as it was on a revolutionary doctrine laced with an explosive Messianism, Marxism represented for the newly literate at once an intellectual challenge and a complete way of life to which he could dedicate his energies, abilities and enthusiasms. For those of lesser altruism there was the possibility of a career in the service of the State. Reading and writing were not mere academic exercises, complete in themselves. Literacy was instinct with social purpose. It was a means of personal advancement in a worthy and socially acceptable cause. It had all the fascination of something at once novel and accepted. It was a sure means to personal advancement and to the enjoyment of the world's treasures of mental culture.

For the participants, the Soviet literacy campaign combined the appearance of a military campaign and a spiritual crusade. It developed its own mythology and martyrology. The remark about Lenin working himself to death, wearing his brain out in the service of the people, has already been quoted. Literacy teaching, especially in the backward nationalities and in the cultural hinterlands of peasant life, was an enterprise not without danger. This was especially true when the campaign was linked with propaganda against the *kulaks* and *Nepmen*. The activist of the *Down with Illiteracy Society* Nina Sanko who was killed by the 'class enemy' in the course of this work was held up for emulation to the 'Young Guard' of the *Komsomol*.

On 17 May, 1929 the Central Committee published another decree *On the Task of Liquidating Illiteracy*.⁴² This emphasized the need for a unified plan and a unified organization. Instructions were sent down to all Party organs, to trade unions and the *Down with Illiteracy Society*. These were: to step up the campaign in general; to concentrate on the industrial worker in the towns; in villages to pay special attention to the farm labourers, to *Sovkhozniiks* (State Farm Workers), seasonal workers, poor peasants and collective farmers. A network of schools was to be established for the poorly literate: here they could obtain a general education and any 'slipping-back' could be prevented.

In June the Eighth All-Russian Congress on the Elimination of Illiteracy accepted these as the future tasks of the O.D.N. The fact that the same administrative and field work problems continued to be discussed by the different organs of state power and by the voluntary organizations illuminates the continuing difficulties of co-ordination of plans. The Party

Congresses, various Party Committees, several Ministries were simultaneously publishing decrees, directives, plans, commendations and criticisms. A large number of paper-plans for an ideal system of division of labour were drawn up. But in spite of administrative interventions the field work made progress. The 'cultural shock-troops' advanced and occupied enemy positions, the long war of attrition against illiteracy and backwardness made progress.

In 1930-1931 a general agreement was reached between all the participating organizations. These included the Young Communist League, the Trade Unions (who contributed 6 roubles per member for literacy teaching and 12 roubles for educating near-literates), student organizations, professional associations of scientific workers, numerous societies and institutions for popular education, teachers, organizations, publishing firms such as *Gosizdat* and *Tsentrizdat*, the Proletarian Ramblers' association, *Radiotsentr*, *Soyuzkino* and many others. This general agreement on strategy carried the campaign to a new level. Specific decisions were: that all organizations should co-ordinate their work in accordance with a detailed plan so that an all-out campaign against illiteracy could be mounted; the campaign would be based on 'socialist competition', that is, each group would accept a target of achievement in competition with all other groups; reports of progress would be published regularly so that each group could see its achievement in relation to the total picture and be constantly encouraged to improve on its performance; the competition would cease on a fixed date, when various rewards in the form of banners, medals, citations etc. would be distributed. Constant and close supervision of lower level organizations by higher ones would ensure steady progress. The extent to which targets were being achieved would be analysed regularly and inhibiting factors removed by 'shock' tactics.

The organizations involved agreed to mobilise and educate two million 'soldiers of culture'. Special attention was to be paid to their political education and to making them understand not only the short-term programme but its ultimate aims. The two million 'soldiers of culture' were to be mobilised according to the following control figures:

TABLE 6
COMPOSITION OF THE PROPOSED "ARMY OF CULTURE" (1931)

Trade Unions	600,000
Young Communist League	250,000
Down with Illiteracy Society	550,000
<i>Proletstud</i>	70,000
<i>ONO</i> (Society for Popular Education)	500,000
<i>Vsekomprofsoyuz</i>	30,000
TOTAL	2,000,000

This tremendous plan⁴³ was put into operation in the ensuing period. It was a central component of the unitary plan to transform Soviet

society industrially, socially and politically. The entire campaign was controlled by the People's Commissariat of Education. Each national republic, each region, district, school, teacher and student was expected to compete against all the others in completing and overfulfilling their 'quotas' of educated illiterates by the control dates. The subjects of this intensive effort were examined by inspectors from the local education departments: if successful they were awarded certificates of literacy.

Simultaneously with the all-out campaign notable changes were taking place in the school system. On 5 September, 1931 and again on 25 August, 1932, the Central Committee issued decrees on the primary and secondary schools. These aimed to abolish the anarchy that existed in the schools following on the Revolution and to give control back to the teachers. Doctrines of the 'withering away of the school', the project method, the Dalton plan, and many other kinds of 'experimental education' were condemned as aberrations which had to be abolished from the school system. Formal methods of teaching were reintroduced, clear aims and directives were given to teachers about standards, methods and content of school-work. Discipline of an authoritarian type was re-established and a strong centralized control was instituted, very similar to that of Tsarist times. The Communist ideal was placed sharply before teachers and pupils. Examinations and grading were reintroduced. The educational ideal was stated in a keynote speech by Zalkind:

We need a socially 'open' man who is easily collectivised and quickly and profoundly transformed in his behaviour—a man capable of being a steady, conscientious and independent person, politically and ideologically educated.⁴⁴

Shulgin, the main protagonist of the theory of the 'withering away of the school' had the *Marx-Engels Institute of Pedagogy* dissolved from under him. A number of other individuals found that their talents had become redundant. Conservatism, Stalinist in form, was established as the ruling force in education, as in society generally. The bureaucratic system inherited from the Autocracy asserted its dominance over the revolutionary impulse. At this time all criticism of policy and of the leadership had been silenced: the Opposition within the Party had been suppressed. Trotsky was expelled from the territory of the USSR in February, 1929. The 'Right Deviation' of Bukharin, Zinoviev and Kamenev was crushed and discredited. The 'Left Opposition' had long before been obliterated.⁴⁵

The First Five-Year Plan, initiated in 1928, was officially declared at an end on 31 December, 1932, four-and-a-half years later. According to Stalin's figures industrial development had been fulfilled up to 93.7 per cent of the plan.⁴⁶ *Gosplan* reported that the plan to teach 8,200,000 illiterates and near-literates had been achieved two-and-a-half times over. Kalinin, writing to the organizations concerned in 1934, asserted:

The elimination of illiteracy in our country is basically completed. More than nine-tenths of the population can read and write in their mother tongue.⁴⁷

Stalin recorded an increase in literacy from 67 per cent in 1930 to 90 per cent at the end of 1933. At the Seventeenth Party Congress, the 'Congress of Victors', he reported on 26 January, 1934:

From being an agrarian country we have become an industrialized state . . . From being a land of darkness, illiteracy and lack of culture we have become a literate and cultured people, with an enormous network of primary, secondary and higher schools, operating in the national languages of the USSR.⁴⁸

According to official figures, 90 percent literacy had been achieved in a tremendous end-spurt during the crucial year, 1932. More than 14 million adults were taught to read and write during this year, compared with only nine and a quarter millions the year before. This should be compared with the figure of less than nine millions in the year following the completion of the Five-Year Plan.⁴⁹

In the years following 1934 the campaign continued. Certain areas of illiteracy remained to be mopped up. Peasant women and the non-Russian nationalities which had newly emerged from a nomadic condition were black spots: they provided more millions for the 'soldiers of culture' to deal with. In 1935 the movement for the rationalization of production associated with the name of Stakhanov was initiated in the Donetz region. Alexei Stakhanov was originally an illiterate miner. Using techniques devised by American efficiency experts, especially Taylor and Gilbreth (the use of modern machinery to the fullest extent, devising the most rational division of labour possible, employing skilled workers only in their specialist capacities) he increased the output of coal in one shift from an initial 7 tons to 102 tons. This feat was hailed as 'the first beginning—still feeble, it is true, but nevertheless the beginning—of a rise in the technical and cultural level of the working-class'.⁵⁰ The Stakhanovite method was hailed as the harbinger of those new techniques which would abolish the distinction between mental and manual labour.

TABLE 7
NUMBERS OF ADULTS INSTRUCTED

Year	Illiterates	Near-literates	Total
1927	1,351,500	189,100	1,540,600
1928	1,247,500	218,700	1,466,200
1929	1,799,600	256,200	2,055,800
1930	5,771,500	922,500	6,764,000
1931	6,189,800	3,065,000	9,254,800
1932	7,663,600	6,582,100	14,245,700
1933	4,770,000	4,199,600	8,969,600
1934	4,659,800	3,758,000	8,417,800
1935	3,867,700	3,844,000	7,711,700
1936	3,329,600	3,775,900	7,105,500
1937	4,086,000	4,380,300	8,466,300
1938	3,830,800	3,624,300	7,455,100
1939	3,313,200	3,636,800	6,953,000

A new fillip was given to the illiteracy campaign. In the Stakhanovite movement popular enlightenment was demonstrably associated with that increase in industrial productivity which lay at the basis of social

and individual prosperity. The literacy and productivity campaign could be carried on in terms of a novel, personalized image of service and social innovation.

The course of the campaign can be summarized in the official figures.⁵¹

It has been made clear that literacy was regarded by the Soviet communist government as a means to certain political and social ends. These may be summarized as follows: political enlightenment in accord with the tenets of Marxism-Leninism; a vast increase in material production to form the basis of the good life; the achievement of a communist society. The curriculum of the adult schools was not confined to literacy education; on the contrary. A carefully devised scheme of work was followed to lay the groundwork of a number of subjects. Krupskaya refers to this curriculum in 1934:

The general education schools for adults should bring the students to the level of the primary school in native language and mathematics (arithmetic), they should establish general habits as far as the use of newspapers is concerned, also books, libraries, the radio. They should give a unified knowledge of geography and history. This should include knowledge of our native country and of the world, without which it is impossible to achieve any sort of independent, self-educative work or any sort of social-political work.⁵²

In the schools for illiterates instruction in reading and writing was for a total of 200 hours, in arithmetic for 130 hours. In the schools for semi-literates 145 hours of instruction in the native language was given. This covered not only reading and writing, but speech training, oral and written composition, the drafting of memoranda, grammar, orthography and sentence construction. Geography was taught for 60 hours: this covered physical and human geography, and was designed to give a detailed knowledge of the distribution of land and sea and of the USSR. As People's Commissar for Education since 1929 N. K. Krupskaya gave special attention to the curriculum and methodology for teaching adults.

The special measures adopted to establish literacy in the national minorities are reflected in the fact that in 1931 textbooks were printed in 104 languages of the national republics. Certain languages which had no written alphabets were provided with them. Latin or Russian script was used, whichever reflected the phonetic structure of the language better. In this way such people as the Chuvash, Tatar, Karelian, Bashkir amongst others, were brought under the aegis of world culture. Thousands of Russians and non-Russians were drawn into active social life at the national level for the first time. Thousands became specialists of one kind or another. Women were liberated from their former subjection. Attempts were made to abolish purdah and polygamy, using literacy as a wedge, and woman began to take an equal place as citizen and worker.

It is interesting to notice the fact that voluntary organizations and individual citizens were involved in the campaign at grass-roots level. To give only one example, in the spring and summer of 1936 the Moscow committee of the turf-cutters' union was responsible for educating over 6,000 illiterates and nearly 8,000 near-literates. they provided 50 teachers for whom short training courses were organized, and 350 'soldiers of culture'.

It is important to remember that the dry statistics referring to millions of illiterates taught actually reflect the end-product of millions of acts of individual initiative and service. The remarkable technical achievements of the Soviet state are based on the success of the mass campaign to abolish illiteracy.

According to the census report, in 1939 the literacy rate for those between 9 and 49 years stood at 89.1 percent. In the case of the male population it was 95.1 percent.

Thus was realized Lenin's proposal and promise of 26 December, 1919, to liquidate illiteracy in the territory of the USSR and 'establish the possibility for the whole population to participate in our political life'.

- ¹ Ivanovich, V. (1906) pp. 38-55, especially p. 42.
- ² Ivanova, A. M. (1949) p. 7, quoting Guryevitch, A. in *Vneshkolnoye Dyelo*, 1924, p. 207.
- ³ *Ibid.* p. 3.
- ⁴ Krupskaya, N. K. (1922) p. 175.
- ⁵ Lenin, V. I. *Sochineniya*, 3rd edition, vol. 27, p. 51.
- ⁶ *Programma i Ustav Vsesoyuznoi K.P. (B)*, Moscow, 1938, P. 28.
- ⁷ *V.K.P. (B) v rezolyutsiyakh*, Moscow 1940 vol. 1, p. 309.
- ⁸ Lenin, V.I. *op. cit.* vol. 24, p. 275.
- ⁹ Volpicelli, L. (1954) p. 19; decree of 29 October, 1917.
- ¹⁰ *Sobranie Ukazov* 1919, no. 67, p. 592.
- ¹¹ Ivanova, A.M. (1949) p. 14.
- ¹² Krupskaya, N.K. (1938).
- ¹³ Lenin, V.I. *op. cit.* vol. 35, p. 395.
- ¹⁴ Ivanova, A.M. (1949) p. 15.
- ¹⁵ Lenin, V.I. *op. cit.* vols. 25, pp. 449-450; 27, pp. 47-48; 27, p. 51.
- ¹⁶ *Ibid.* vol. 27, p. 51.
- ¹⁷ *Ibid.* vol. 27, pp. 387-388.
- ¹⁸ *Ibid.* vol. 26, p. 166.
- ¹⁹ Ivanova, A.M. (1949) pp. 20-22.
- ²⁰ *Ibid.* pp. 22-23.
- ²¹ *Ibid.* pp. 24-25.
- ²² McLeish, J. in *Fundamental and Adult Education*, 1955, pp. 157-159.
- ²³ Krupskaya, N.K. *Sochineniya* (1932) vol. ii, pp. 88-89.
- ²⁴ Voskresenski, V.D. in *Fundamental and Adult Education*, 1959, pp. 154-172; especially p. 163.
- ²⁵ *Ibid.* pp. 163-172.
- ²⁶ Ivanova, A.M. (1949) pp. 27-28.
- ²⁷ *Krest'yanskaya Biblioteka*, Moscow-Leningrad, 1925, 32 vols. This can be seen in the library of the Society for Cultural Relations with the U.S.S.R. London, England.
- ²⁸ Kuznetsov, M. *Lenin i Krest'yanstvo*, Moscow-Leningrad, State Publishing House, 1925.
- ²⁹ *Ibid.* pp. 3-4.
- ³⁰ *Ibid.* p. 72.
- ³¹ Krupskaya, N.K. *Likvidatsiya nyegramotnosti*, 1939, ed. pp. 13-14.
- ³² *Kul'turnoye Stroitel'stvo S.S.S.R.* 1940, p. 93.
- ³³ Ivanova, A.M. (1949) pp. 31-32.
- ³⁴ Deutscher, I. *Trotsky 1921-1929*, London 1959, p. 295.
- ³⁵ Lenin, V.I. *Selected Works*, 1937, vol. 9, p. 382.
- ³⁶ Deutscher, I. *ibid.* p. 296.
- ³⁷ cf. Trotsky, L. *The New Course* (1943 ed.) pp. 36-42; Deutscher, I. *op. cit.* p. 302.
- ³⁸ *V.K.P. (B) XV Konferentsiya*, (Stenograficheski otchet) Moscow, 1927 pp. 65-66.
- ³⁹ Ivanova, A.M. (1949) pp. 33-34, quoting *V.K.P. (B) v Resolyutsiyakh i Resheniyakh*, 1940, vol. 2, p. 244.
- ⁴⁰ *Ibid.* pp. 34-35.
- ⁴¹ VII Syezd V.K.S.M. 1926, (Steno. Ot.), pp. 15-18.
- ⁴² *O rabote po likvidatsii nyegramotnosti*, Pravda 24 May, 1929, quoted Ivanova, A.M. *op. cit.* p. 38.

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